RAND HEALTH

DEVELOPMENT & VALIDATION OF A REVISED NURSING HOME ASSESSMENT TOOL: MDS 3.0

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MDS 3.0

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**Development & Validation
of a Revised Nursing Home Assessment Tool:
MDS 3.0**

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MDS 3.0

Development & Validation of a Revised Nursing Home Assessment Tool: MDS 3.0

Project Abstract

Purpose: Recognizing the care implications and program importance of an improved Minimum Data Set (MDS), CMS initiated a national project to create version 3.0 of the MDS. The revision aimed to improve the clinical relevance and accuracy of MDS assessments, increase the voice of residents in assessments, improve user satisfaction, and increase the efficiency of reports.

Methods: A joint RAND/Harvard team engaged in a deliberate iterative process to incorporate provider and consumer input, expert consultation, scientific advances in clinical knowledge about screening and assessment, CMS experience, and intensive item development and testing by a national VHA consortium. This process allowed the final national testing of MDS 3.0, which was conducted in 71 community nursing homes (NHs) in 8 states and 19 VA NHs, to include well-developed and tested items. The national test directly examined agreement between assessors (reliability); validity of new cognitive, depression, and behavior items; response rates for interview items; user satisfaction and feedback on changes; and time to complete the assessment. In addition, the national test design allowed comparison of item distributions between MDS 3.0 and MDS 2.0 and thus facilitated mapping into payment cells.

Major Findings: The national trial for MDS 3.0 had strong results.

- **Accuracy:** MDS 3.0 items showed either excellent or very good reliability even when comparing research nurse to facility-nurse assessments. For items that were validated against criterion measures, the MDS 3.0 performed better than MDS 2.0.

- **Resident voice:** MDS 3.0 successfully included resident voice. The majority of residents were able to complete interview sections. Staff members reported that items provided useful clinical insights; analyses showed improved validity for cognitive and mood items.

- **Clinical Relevance:** Nurses who used MDS 3.0 reported that the revisions were more clinically relevant and useful than MDS 2.0; items used in other clinical settings showed either excellent or very good reliability with low rates of missing responses when tested in MDS 3.0.

- **Efficiency:** MDS 3.0 improved assessments while decreasing time to complete. The average time for completing the MDS 3.0 was 45% less than the average time for MDS 2.0, based on the same sample.

- **Crosswalk:** Although MDS 3.0 improved detection of clinical problems, items could be mapped to MDS 2.0 payment cells in a manner that avoided significant shifts in payment.

Conclusions: Improvements incorporated in MDS 3.0 produced a more efficient assessment: better quality information was obtained in less time. Such gains should improve identification of resident needs and enhance resident-focused care planning. In addition, including items recognized in other care settings is likely to enhance communication among providers. These significant gains reflect the cumulative effect of changes across the tool, including use of more valid items, direct inclusion of resident reports, improved clarity of retained items, deletion of poorly performing items, form redesign, and briefer assessment periods for clinical items.

Recommendations: The RAND/Harvard team recommends that MDS 3.0 be adopted. Its strong performance presents an opportunity to improve MDS assessments and warrants the resources that will be needed to implement the new tool. MDS 3.0 is attached.

Development & Validation
of a Revised Nursing Home Assessment Tool:
MDS 3.0

In response to changes in nursing home care, resident characteristics, advances in resident assessment methods, and provider and consumer concerns about the performance of the Minimum Data Set (MDS) 2.0, CMS contracted with RAND and Harvard to undertake a significant revision and national testing of Version 3.0 of the MDS.

Importance

The MDS is a potentially powerful tool for implementing standardized assessment and for facilitating care management in nursing homes (NHs). Its content has implications for residents, families, providers, researchers, and policymakers, all of whom have expressed concerns about the reliability, validity, and relevance of MDS 2.0. Some argue that because MDS 2.0 fails to include items that rely on direct resident interview, it fails to obtain critical information and effectively disenfranchises many residents from the assessment process. In addition, many users and government agencies have expressed concerns that the structure, length, and data collection burden of the MDS 2.0 exacerbate problems with data quality and validity when the MDS is collected by actual NH staff.[1] Other stakeholders contend that items used in other care settings should be included to improve communication across providers.

Improving the reliability, accuracy, and usefulness of the MDS has profound implications for NH care and public policy. Enhanced accuracy supports the primary legislative intent that MDS be a tool to improve clinical assessment and supports the credibility of programs that rely on MDS. In addition, most agree that the potential of the MDS to improve resident care can be realized only if providers do not view the MDS as an onerous data collection burden.

Goals

The goals of the MDS 3.0 revision were to introduce advances in assessment measures, increase the clinical relevance of items, improve the accuracy and validity of the tool, and increase the resident's voice by introducing more resident interview items. Providers, consumers, and other technical experts in NH care requested that MDS 3.0 revisions focus on improving the tool's clinical utility, clarity, and accuracy. CMS also wanted to shorten the tool while maintaining the ability to use MDS data for quality indicators, quality measures, and payment (resource utilization groups-III [RUGs-III] classification).

In addition to improving the content and structure of the MDS, the RAND/Harvard team effort also aimed to improve user satisfaction. User attitudes are key determinants of quality improvement implementation. Negative user attitudes toward the MDS are often cited as a reason that NHs have not full implemented it in targeted care planning.

Chapter 1: Executive Summary

Methods

The RAND/Harvard approach to evaluating and revising the MDS was based on extensive outreach that facilitated the exchange of views on controversial issues among diverse stakeholders. To address many of the issues and challenges previously identified and to provide a solid empirical foundation for examining revisions to the MDS before they were implemented, the team engaged in a careful iterative process that incorporated provider and consumer input, expert consultation, scientific advances in clinical knowledge about screening and assessment, CMS experience, and intensive item development and testing by a national Veteran's Health Administration (VHA) consortium. This process allowed the final national testing of MDS 3.0 to include well-developed and tested items. A memorandum of understanding between CMS and the VHA facilitated collaboration between the agencies and between research teams in creating and testing MDS 3.0.

For some items and sections, addressing the challenges associated with the MDS 2.0 required only minor modifications to the form or to item wording and instructions. For other sections, addressing the issues required a more extensive update and revision. In all cases, the RAND/Harvard team considered the implications of proposed changes and identified trade-offs where they existed.

The national validation and evaluation of the MDS 3.0 included 71 community NHs (3,822 residents) and 19 VHA NHs (764 residents), regionally distributed throughout the United States. The evaluation was designed to test and analyze inter-rater agreement (reliability) between gold-standard (research) nurses and between facility and gold-standard nurses, validity of key sections, response rates for interview items, anonymous feedback on changes from participating nurses, and time to complete the MDS assessment. In addition, the national test design allowed comparison of item distributions between MDS 3.0 and MDS 2.0 and thus facilitated mapping into payment cells.

Results

The national trial for MDS 3.0 demonstrated the feasibility of giving NH residents voice by gathering MDS information directly from them and showed that MDS 3.0 improved the accuracy of the assessment items and increased the tool's efficiency.

Giving Residents Voice

Perhaps the most significant advance in MDS 3.0 is the use of direct interview items to consistently elicit resident voice. Respect for the individual resident is fundamental to high quality care and to residents' quality of life. An important way to convey this respect is to ask residents directly about how they feel and about their preferences. General, unfocused questions often fail to convey a real desire to get a response and are unlikely to elicit meaningful report of symptoms or preferences. Focus groups and feedback from consumers show that residents and families want to be asked specific and direct questions.

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MDS 3.0 interview items were tested to identify the best way to measure the topic in question. The item wording and response options in the revised tool have been shown to work in nursing home and other frail populations. Clinicians in other settings already use many of these items. Including structured interview items ensures that the MDS items are using a common measuring stick, increases reliability across facilities, and provides a common language for communication across settings.

In item testing, we considered "simpler" yes/no formats for the resident interview items. We found that for several items, many older adults struggled with reducing their experience to yes/no. They found it easier to answer a question if they were allowed to select from a range of choices that reflected the variations they experience day to day. This phenomenon is well recognized in interview science. If an item asks about something that is not fixed or absolute, then having more than two response choices can make responding easier for older adults. The response options in MDS 3.0 have been carefully selected and tested to allow this choice while matching the responses to the question being asked. Analysis of the national test showed that residents used the full range of response options available to them. The fact that they used all of the options lends additional support for the utility of the response scales.

Residents were able to answer MDS 3.0 interview items. In a sample of 3,258 residents scheduled for MDS 2.0 assessments, the majority of residents were able to complete MDS 3.0 structured interviews. Response rates were high across the interview sections, ranging from 83% completing the preferred activities interview to 90% completing the brief interview for mental status. This national sample included the full range of cognitive levels found in U.S. nursing homes. For those residents who could not complete interviews, an alternative staff observation assessment was provided.

The resident interview items contribute to, but do not replace, day-to-day interactions. Although some worry that structured items dictate the content of resident and staff interactions, staff who used the structured items consistently report that the opposite occurs. Structured questions often bring up important issues for the resident and open up discussion between the resident and provider, creating an ongoing dialogue within which it is safe to report symptoms and care needs. One nurse in the study commented: "This reminds me of why I became a nurse." Another wrote "It is amazing; residents don't mind being asked and you learn so much from asking."

Improved Accuracy and Reliability

MDS 3.0 includes many specific changes designed to improve the accuracy of assessments. In several sections, we included items that were identified by content experts and research as more valid measures of the condition than those used in MDS 2.0. Items were revised based on experience of users and input from subject matter experts who were familiar with nursing home residents and nursing home care. Definitions for several items that have been problematic are included on the form. In addition, MDS 3.0 includes modified response options or instructions that aim to increase clarity and therefore agreement across assessors. For example, some items combine response categories where differentiation had been difficult in the past. Instructions for diagnoses

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have been revised to include detailed guides to defining active disease. Overall, we did not include any new items in MDS 3.0 unless the national evaluation activity showed that they represented an improvement over old items.

Whenever possible, we included items or language used in other health care settings in order to improve communication across settings and providers. For example, items included in the National Pressure Ulcer Advisory Panel's PUSH tool are used to describe pressure ulcers; new ADL items separate toilet transfer from toileting and upper body dressing from lower body dressing. The new delirium section is based on the Confusion Assessment Method (CAM), a set of items that has been validated for frail older adults in hospital settings. The MDS 3.0 CAM is informed by observations made during the brief interview for mental status, a structured cognitive assessment. Language in items has also been revised to reflect the standards applied in other settings.

Giving residents voice also contributes to the increased accuracy and reliability of the MDS 3.0. Often the most accurate way to assess many topics is to ask the resident directly. For areas such as cognition, mood, preferences, and pain, studies have repeatedly shown that staff or family impressions often fail to capture the resident's (or any adult's) real condition or preferences. Unfortunately, staff and family observations of depressed mood and pain significantly *underestimate* the presence of these treatable conditions. This is true across settings and for both short- and long-stay residents.

Reliability, or reproducibility, of a measure is a necessary condition for valid performance. To assess reliability of MDS 3.0 items, we used two kinds of comparisons: gold-standard nurse to gold-standard nurse and gold-standard to facility-nurse. The gold-standard to gold-standard comparisons provided information on instrument performance when used by highly trained nurses guided by research protocols. The gold-standard to facility-nurse comparisons measured performance in a more operational environment where the assessor has ongoing facility responsibilities and less training. This type of comparison is important for gaining insights into how the tool will actually perform. In most past tests of MDS 2.0, gold-standard to facility-nurse reliability has been much lower than gold-standard to gold-standard reliability.

Analysis of the test results showed that MDS 3.0 items had either excellent or very good reliability even when comparing research nurse to facility-nurse assessment. In most instances these were higher than those seen in the past with MDS 2.0. In addition, for the cognitive, mood and behavior items, national testing included collection of independent criterion or gold-standard measures. These MDS 3.0 sections were more highly matched to criterion measures than were MDS 2.0 items.

Increased Efficiency

On average, MDS 3.0 took about 45% less time to complete than MDS 2.0 in the national test. This significant gain was achieved through several types of revisions. Going directly to the resident does not just increase the accuracy and utility of MDS items. It is also often more efficient. Many MDS 2.0 sections direct the assessor to review the record, talk to staff across all shifts, and talk to the resident or the family. Residents are mentioned as

a data source, but they are only one source on a long list, and evidence suggests that they are not reliably included.

The failure to systematically include residents is problematic given that documentation of pain, mood, and preferences is often missing or inaccurate in the medical record, and the workload in facilities can make observing subtle signs and symptoms challenging. For cognitive assessment, mood, preferences, and pain, the standardized interview can be the sole information source for most residents, providing more accurate information directly and efficiently. Responses can be entered directly into the MDS 3.0 and the item is complete. Facilities can then apply these time savings to more thoroughly evaluate those residents who cannot self-report. Accessing multiple data sources is only necessary for those residents who cannot participate in answering a particular item. Overall, MDS 3.0 is more efficient because it yields higher quality information for the time invested.

MDS 3.0 includes several other important changes that will improve efficiency. The assessment questions aim for greater consistency in look-back windows and test a shorter look-back period than was used in prior versions. To the extent possible, we eliminated items that did not screen for clinical symptoms and syndromes. In addition, the form has been redesigned for ease of use with larger fonts, logical page breaks, consistent patterns for response types, fewer items per page, and more instructions on the form itself rather than in a separate manual. Other revisions to improve accuracy such as updating item labels and adding definitions to clarify questions that have been problematic in past performance also decrease the cognitive steps and time required to complete the form.

In eliminating items from MDS 2.0, we took care to provide equivalent items if the item was the basis for payment or quality measurement and a valid replacement could be created within the scope of MDS data collection. The national sample was designed to permit comparison of the effects of changes on payment cells. These analyses showed that clinical assessment changes could be mapped into payment cells without substantial changes in payment. However, changes to report of therapies and treatments did not evidence equivalent mapping; therefore we did not include the changes to therapies and treatments in MDS 3.0, pending ongoing work at CMS focused on payment recalibration.

Improvements in Staff Satisfaction and Perceptions of Clinical Utility

These gains in effectively capturing resident voice, improving accuracy, and increasing efficiency are reflected in high levels of staff satisfaction. Nurses who participated in the national test provided anonymous written feedback at the end of the field trial, comparing MDS 3.0 overall to MDS 2.0.

The nurses' feedback was overwhelmingly positive. For example, 81% said that MDS 3.0 was more clinically relevant; 85% felt that the new tool would help them identify problems that might not otherwise have been noticed, and 84% said that the structured interview sections (on cognition, mood, customary routine, activities, pain) improved their knowledge of residents' health conditions. Eighty-nine percent felt that the MDS 3.0 items allowed a more accurate report of a resident's characteristics, 79% thought that the

revised tool better reflected best clinical practice or standards, and 85% found the MDS 3.0 questions more clearly worded.

Conclusions

Improvements incorporated in MDS 3.0 produced a more efficient assessment instrument: better quality information was obtained in less time. Such gains should improve identification of resident needs and enhance resident-focused care planning. In addition, inclusion of items recognized in other care settings is likely to enhance communication among providers. These significant gains reflect the cumulative effect of changes across the tool, including use of more valid items, direct inclusion of resident reports, improved clarity of retained items, deletion of poorly performing items, form redesign, and briefer assessment periods for clinical items.

Recommendations

The RAND/Harvard team recommends that MDS 3.0 be adopted. Its strong performance presents an opportunity to improve MDS assessments and warrants the resources that will be needed to implement MDS 3.0. Gains in the revised MDS 3.0 should be supported by enhanced national training outreach and revised Resident Assessment Protocols to further translate this significantly enhanced assessment tool into improved care.

MDS 3.0:
Recommended Form

Identification Information

A1.	**Facility Provider Numbers**	
	a.	**National Provider Identifier (NPI)**
		__ __ __ __ __ __ __ __ __ __
	b.	**CMS Certification Number (CCN)**
		__ __ __ __ __ __
	c.	**State Provider Number**
		__ __ __ __ __ __ __ __ __ __ __ __ __

A2.	**Legal Name of Resident**

_____

a. (First)   b. (Middle Initial)   c. (Last)   d. (Suffix)

A3.	**Social Security and Medicare Numbers**	
	a.	**Social Security Number**
		__ __ __ — __ __ — __ __ __ __
	b.	**Medicare number** (or comparable railroad insurance number)
		__ __ __ __ __ __ __ __ __ __ __

A4.	**Medicaid Number** (enter "+" if pending, "N" if not a Medicaid recipient)

__ __ __ __ __ __ __ __ __ __ __ __ __ __

A5.	**Gender**

Enter [ ] Code

1. **Male**
2. **Female**

A6.	**Birthdate**

__ __ — __ __ — __ __ __ __
month   day   year

A8.	**Language**—complete only on admission, annual, and significant change assessment (A10a = 01, 03, or 04)

Enter [ ] Code

a. **Does the resident need or want an interpreter to communicate with a doctor or health care staff?**
   0. **No**
   1. **Yes** ➔ If yes, specify preferred language: **b.** _____
   9. **Unable to determine**

A10. Type of Assessment/Tracking

Enter [ ][ ] Code

a. **Federal OBRA Reason for Assessment/Tracking**
- 01. **Admission assessment** (required by day 14)
- 02. **Quarterly review assessment**
- 03. **Annual assessment**
- 04. **Significant change in status assessment**
- 05. **Significant correction to prior full assessment**
- 06. **Significant correction to prior quarterly assessment**
- 99. **Not OBRA required assessment/tracking**

Enter [ ] Code

b. **PPS Assessments**

PPS Scheduled Assessments for a Medicare Part A Stay
- 1. **5-day scheduled assessment**
- 2. **14-day scheduled assessment**
- 3. **30-day scheduled assessment**
- 4. **60-day scheduled assessment**
- 5. **90-day scheduled assessment**
- 6. **Readmission/return assessment**

PPS Unscheduled Assessments for a Medicare Part A Stay
- 7. **Unscheduled assessment used for PPS** (OMRA, significant change, or significant correction assessment)
- 9. **Not PPS assessment**

Enter [ ] Code

c. **PPS Other Medicare Required Assessment**—**OMRA** (required when all rehabilitation therapy discontinued)
- 0. **No**
- 1. **Yes**

A11. Submission Requirement

Enter [ ] Code

a. **Federal required submission**
- 0. **No**
- 1. **Yes**

Enter [ ] Code

b. **State required submission**
- 0. **No**
- 1. **Yes**

Enter [ ] Code

c. **Submission only required for other reasons (e.g. HMO, other insurance, etc.)**
- 0. **No**
- 1. **Yes**

A12. Preadmission Screening and Resident Review (PASRR)—Complete only if A9a = 01, 03, or 04

Enter [ ] Code

Has the resident been evaluated by Level II PASRR, and determined to have a serious mental illness and/or mental retardation or a related condition?
- 0. **No**
- 1. **Yes**
- 9. **Not a Medicaid certified unit**

A13. Medicare Stay

Enter [ ] Code

a. **Is the resident currently in a Medicare-covered stay?**
- 0. **No** ➔ Skip to A13, State Case Mix Group
- 1. **Yes** ➔ Continue to A12b

b. **Start date of current Medicare stay**

___ ___ — ___ ___ — ___ ___ ___ ___

  month   day   year

c. **Medicare Part A HIPPS code for billing**

___ ___ ___ ___ ___ ___

(RUG-III group followed by HIPPS modifier based on type of assessment)

A14. State Case Mix Group (If required by the state)

___ ___ ___ ___ ___ ___ ___

A15. Optional Facility Items

a. **Medical Record Number**

___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

b. **Room number**

___ ___ ___ ___ ___

c. **Name by which resident prefers to be addressed:**

_____

d. **Lifetime occupation(s)** – put "/" between two occupations

_____

A16. Assessment Reference Date

Observation end date

___ ___ — ___ ___ — ___ ___ ___ ___
month   day   year

A22. Signature of Persons Completing the Assessment

I certify that the accompanying information accurately reflects resident assessment information for this resident and that I collected or coordinated collection of this information on the dates specified. To the best of my knowledge, this information was collected in accordance with applicable Medicare and Medicaid requirements. I understand that this information is used as a basis for ensuring that residents receive appropriate and quality care, and as a basis for payment from federal funds. I further understand that payment of such federal funds and continued participation in the government-funded health care programs is conditioned on the accuracy and truthfulness of this information, and that I may be personally subject to or may subject my organization to substantial criminal, civil, and/or administrative penalties for submitting false information. I also certify that I am authorized to submit this information by this facility on its behalf.

Signature	Title	Sections	Date
a.			
b.			
c.			
d.			
e.			
f.			
g.			
h.			
i.			
j.			
k.			
l.			

A23. Signature of RN Assessment Coordinator Verifying Assessment Completion

a. **Signature**

b. **Date RN Assessment Coordinator signed assessment as complete**

___ ___ — ___ ___ — ___ ___ ___ ___
month   day   year

Section B — Hearing, Speech, and Vision

B1. Comatose

Enter Code

Persistent vegetative state/no discernible consciousness in last 5 days.

- 0. **No** ➜ Continue to B2, Hearing
- 1. **Yes** ➜ Skip to G1, Activities of Daily Living (ADL) Assistance

B2. Hearing

Enter Code

Ability to hear (with hearing aid or hearing appliances if normally used) in last 5 days.

- 0. **Adequate**—no difficulty in normal conversation, social interaction, listening to TV
- 1. **Minimal difficulty**—difficulty in some environments (e.g. when person speaks softly or setting is noisy)
- 2. **Moderate difficulty**—speaker has to increase volume and speak distinctly
- 3. **Highly impaired**—absence of useful hearing

B3. Hearing Aid

Enter Code

Hearing aid or other hearing appliance used in above 5-day assessment.

- 0. **No**
- 1. **Yes**

B4. Speech Clarity

Enter Code

Select best description of speech pattern in last 5 days.

- 0. **Clear speech**—distinct intelligible words
- 1. **Unclear speech**—slurred or mumbled words
- 2. **No speech**—absence of spoken words

B5. Makes Self Understood

Enter Code

Ability to express ideas and wants, consider both verbal and non-verbal expression in last 5 days.

- 0. **Understood**
- 1. **Usually understood**—difficulty communicating some words or finishing thoughts **but** is able if prompted or given time
- 2. **Sometimes understood**—ability is limited to making concrete requests
- 3. **Rarely/never understood**

B6. Ability to Understand Others

Enter Code

Understanding verbal content, however able (with hearing aid or device if used) in last 5 days.

- 0. **Understands**—clear comprehension
- 1. **Usually understands**—misses some part/intent of message **but** comprehends most conversation
- 2. **Sometimes understands**—responds adequately to simple, direct communication only
- 3. **Rarely/never understands**

B7. Vision

Enter Code

Ability to see in adequate light (with glasses or other visual appliances) in last 5 days.

- 0. **Adequate**—sees fine detail, including regular print in newspapers/books
- 1. **Impaired**—sees large print, but not regular print in newspapers/books
- 2. **Moderately impaired**—limited vision; not able to see newspaper headlines but can identify objects
- 3. **Highly impaired**—object identification in question, but eyes appear to follow objects
- 4. **Severely impaired**—no vision or sees only light, colors or shapes; eyes do not appear to follow objects

B8. Corrective Lenses

Enter Code

Corrective lenses (contacts, glasses, or magnifying glass) used in above 5-day assessment.

- 0. **No**
- 1. **Yes**

Section C Cognitive Patterns

<table>
<tr><td colspan="2">C1. Should Brief Interview for Mental Status be Conducted?—Attempt to conduct interview with all residents</td></tr>
<tr><td>Enter
☐
Code</td><td>0. No (resident is rarely/never understood) ➜ instead complete C7-C10, Staff Assessment for Mental Status

1. Yes ➜ Continue to C2, Repetition of Three Words</td></tr>
</table>

Brief Interview for Mental Status (BIMS)

C2.	Repetition of Three Words	C4.	Recall

C2. Repetition of Three Words

Enter ☐ Code

Ask resident: *"I am going to say three words for you to remember. Please repeat the words after I have said all three. The words are: **sock, blue, and bed.** Now tell me the three words."*

Number of words repeated after first attempt
- 0. **None**
- 1. **One**
- 2. **Two**
- 3. **Three**

After the resident's first attempt, repeat the words using cues ("*sock, something to wear; blue, a color; bed, a piece of furniture*"). You may repeat the words up to two more times.

C3. Temporal Orientation (orientation to year, month, and day)

Enter ☐ Code

Ask resident: *"Please tell me what year it is right now."*
- **a. Able to report correct year**
  - 3. **Correct**
  - 2. **Missed by 1 year**
  - 1. **Missed by 2–5 years**
  - 0. **Missed by > 5 years** or no answer

Enter ☐ Code

Ask resident: *"What month are we in right now?"*
- **b. Able to report correct month**
  - 2. **Accurate within 5 days**
  - 1. **Missed by 6 days to 1 month**
  - 0. **Missed by >1 month** or no answer

Enter ☐ Code

Ask resident: *"What day of the week is today?"*
- **c. Able to report correct day of the week**
  - 1. **Correct**
  - 0. **Incorrect** or no answer

C4. Recall

Enter ☐ Code

Ask resident: *"Let's go back to an earlier question. What were those three words that I asked you to repeat?"*

If unable to remember a word, give cue (something to wear; a color; a piece of furniture) for that word.
- **a. Able to recall "sock"**
  - 2. **Yes, no cue required**
  - 1. **Yes, after cueing** ("something to wear")
  - 0. **No**—could not recall

Enter ☐ Code

- **b. Able to recall "blue"**
  - 2. **Yes, no cue required**
  - 1. **Yes, after cueing** ("a color")
  - 0. **No**—could not recall

Enter ☐ Code

- **c. Able to recall "bed"**
  - 2. **Yes, no cue required**
  - 1. **Yes, after cueing** ("a piece of furniture")
  - 0. **No**—could not recall

C5. Summary Score

Enter Numbers ☐ ☐

Add scores for questions C2–C4 and fill in total score (00–15)

Enter 99 if unable to complete interview

Section C   Cognitive Patterns

C6.   Should the Staff Assessment for Mental Status (C7-C10) be Conducted?

Enter **Code**

0.   **No** (resident was able to complete interview) ➔ Skip to C11, Signs and Symptoms of Delirium

1.   **Yes** (resident was unable to complete interview) ➔ Continue to C7, Short-term Memory OK

Staff Assessment for Mental Status

Do not conduct if Brief Interview for Mental Status (C2-C5) was completed

C7.   Short-term Memory OK

Enter **Code**

Seems or appears to recall after 5 minutes.

0.   **Memory OK**

1.   **Memory problem**

C8.   Long-term Memory OK

Enter **Code**

Seems or appears to recall long past.

0.   **Memory OK**

1.   **Memory problem**

C9.   Memory/Recall Ability

Check all that the resident was normally able to recall during the last 5 days:

Check all that apply.		
☐	a.	**Current season**
☐	b.	**Location of own room**
☐	c.	**Staff names and faces**
☐	d.	**That he or she is in a nursing home**
☐	e.	**None of the above** were recalled

C10. Cognitive Skills for Daily Decision Making

Enter **Code**

Made decisions regarding tasks of daily life.

0.   **Independent**—decisions consistent/reasonable

1.   **Modified independence**—some difficulty in new situations only

2.   **Moderately impaired**—decisions poor; cues/supervision required

3.   **Severely impaired**—never/rarely made decisions

Section C Cognitive Patterns

Delirium—Complete on all residents

C11. Signs and Symptoms of Delirium (from CAM©)

After completing Brief Interview for Mental Status or Staff Assessment and reviewing medical record, **code a-d** for the last 5 days.

Coding:

0. **Behavior not present**

1. **Behavior continuously present, does not fluctuate**

2. **Behavior present, fluctuates** (comes and goes, changes in severity)

→

→

Enter Codes in Boxes

Enter ☐ Code	**a.**	**Inattention**—Did the resident have difficulty focusing attention (easily distracted, out of touch or difficulty following what was said)?
Enter ☐ Code	**b.**	**Disorganized thinking**—Was the resident's thinking disorganized or incoherent (rambling or irrelevant conversation, unclear or illogical flow of ideas, or unpredictable switching from subject to subject)?
Enter ☐ Code	**c.**	**Altered level of consciousness**—Did the resident have altered level of consciousness? (e.g., **vigilant**—startled easily to any sound or touch; **lethargic**—repeatedly dozed off when being asked questions, but responded to voice or touch; **stuporous**—very difficult to arouse and keep aroused for the interview; **comatose**—could not be aroused)
Enter ☐ Code	**d.**	**Psychomotor retardation**—Did the resident have an unusually decreased level of activity such as sluggishness, staring into space, staying in one position, moving very slowly?

C12. Acute Onset Mental Status Change

Enter ☐ Code

Is there evidence of an acute change in mental status from the resident's baseline in last 5 days?

    0. **No**

    1. **Yes**

Section D   Mood

D1.   Should Resident Mood Interview be Conducted?—Attempt to conduct interview with all residents

<table>
<tr><td>Enter
☐
Code</td><td>0. **No** (resident is rarely/never understood) ➔ Instead complete (D5-D6) Staff Assessment of Mood
1. **Yes** ➔ Continue to D2, Resident Mood Interview</td></tr>
</table>

D2.   Resident Mood Interview (PHQ-9©)

Say to resident: *"Over the last 2 weeks, have you been bothered by any of the following problems?"*

I. Symptom Presence

If symptom is present, enter yes (1), then obtain symptom frequency in Column II.

II. Symptom Frequency

If yes in column I, Symptom Presence, then ask the resident: *"about **how often** have you been bothered by this?"* Read and show the resident a card with the symptom frequency choices. Indicate response below.

			I. Symptom Presence	1 Day "Rarely"	2–6 Days "Several days"	7–11 Days "More than half the days"	12–14 Days "Nearly every day"
a.	*Little interest or pleasure in doing things*	Enter ☐ Code	0. No 1. Yes ⟶ 9. No response	0	1	2	3
b.	*Feeling down, depressed, or hopeless*	Enter ☐ Code	0. No 1. Yes ⟶ 9. No response	0	1	2	3
c.	*Trouble falling or staying asleep, or sleeping too much*	Enter ☐ Code	0. No 1. Yes ⟶ 9. No response	0	1	2	3
d.	*Feeling tired or having little energy*	Enter ☐ Code	0. No 1. Yes ⟶ 9. No response	0	1	2	3
e.	*Poor appetite or overeating*	Enter ☐ Code	0. No 1. Yes ⟶ 9. No response	0	1	2	3
f.	*Feeling bad about yourself—or that you are a failure or have let yourself or your family down*	Enter ☐ Code	0. No 1. Yes ⟶ 9. No response	0	1	2	3
g.	*Trouble concentrating on things, such as reading the newspaper or watching television*	Enter ☐ Code	0. No 1. Yes ⟶ 9. No response	0	1	2	3
h.	*Moving or speaking so slowly that other people could have noticed. Or the opposite—being so fidgety or restless that you have been moving around a lot more than usual*	Enter ☐ Code	0. No 1. Yes ⟶ 9. No response	0	1	2	3
i.	*Thoughts that you would be better off dead, or of hurting yourself in some way* **ii)** If "Yes", check here to indicate that responsible staff or provider has been informed: ☐	Enter ☐ Code	0. No 1. Yes ⟶ 9. No response	0	1	2	3

D3.   Total Severity Score

☐☐ **Enter Numbers**   **Add scores for all selected frequency responses** in Column II, Symptom Frequency. Score may be between 00 and 27. Enter 99 if unable to complete interview (i.e., "No response" to 3 or more items).

D4. Should the Staff Assessment of Mood be Conducted?

| Enter [ ] Code | 0. **No** (because Resident Mood Interview was completed) ➔ Skip to Section E, Behavior |
| | 1. **Yes** (because 3 or more items in Resident Mood Interview not completed) ➔ Continue to D5, Staff Assessment of Mood |

D5. Staff Assessment of Mood (PHQ-9-OV)
Do not conduct if Resident Mood Interview (D2-D3) was completed

Say to staff: *"Over the last 2 weeks, did the resident have any of the following problems or behaviors?"*	I. Symptom Presence If symptom is present, enter yes (1), then move to column II and select symptom frequency.	II. Symptom Frequency If yes in column I, Symptom Presence, select frequency.			
		1 Day "Rarely"	**2–6 Days** "Several days"	**7–11 Days** "More than half the days"	**12–14 Days** "Nearly every day"
a. **Little interest or pleasure in doing things**	Enter [ ] Code — 0. No / 1. Yes ➔ / 9. No response	0	1	2	3
b. **Feeling or appearing down, depressed, or hopeless**	Enter [ ] Code — 0. No / 1. Yes ➔ / 9. No response	0	1	2	3
c. **Trouble falling or staying asleep, or sleeping too much**	Enter [ ] Code — 0. No / 1. Yes ➔ / 9. No response	0	1	2	3
d. **Feeling tired or having little energy**	Enter [ ] Code — 0. No / 1. Yes ➔ / 9. No response	0	1	2	3
e. **Poor appetite or overeating**	Enter [ ] Code — 0. No / 1. Yes ➔ / 9. No response	0	1	2	3
f. **Indicating that s/he feels bad about self, is a failure, or has let self or family down**	Enter [ ] Code — 0. No / 1. Yes ➔ / 9. No response	0	1	2	3
g. **Trouble concentrating on things, such as reading the newspaper or watching television**	Enter [ ] Code — 0. No / 1. Yes ➔ / 9. No response	0	1	2	3
h. **Moving or speaking so slowly that other people have noticed. Or the opposite— being so fidgety or restless that s/he has been moving around a lot more than usual**	Enter [ ] Code — 0. No / 1. Yes ➔ / 9. No response	0	1	2	3
i. **States that life isn't worth living, wishes for death, or attempts to harm self.** **ii)** If "Yes", check here to indicate that responsible staff or provider has been informed: [ ]	Enter [ ] Code — 0. No / 1. Yes ➔ / 9. No response	0	1	2	3
j. **Being short-tempered, easily annoyed**	Enter [ ] Code — 0. No / 1. Yes ➔ / 9. No response	0	1	2	3

D6. Total Severity Score

[ ][ ] Enter Numbers   **Add scores for all selected frequency responses** in column II, Symptom Frequency.
Score may be between 00 and 30.

Section E   Behavior

E1.   Psychosis

Check if problem condition was present at any time in last 5 days:

Check all that apply.

☐   **a.**   **Hallucinations** (perceptual experiences in the absence of real external sensory stimuli) **or illusions** (misperceptions in the presence of real external sensory stimuli)

☐   **b.**   **Delusions** (misconceptions or beliefs that are firmly held, contrary to reality)

☐   **c.**   **None of the above**

Behavioral Symptoms

E2.   Behavioral Symptom—Presence & Frequency

Note presence of symptoms and their frequency in the last 5 days:

Coding:

0.   **Not present** in last 5 days

1.   **Present 1–2 days**

2.   **Present 3 or more days**

→ Enter Codes in Boxes →

Enter Code ☐   **a.**   **Physical behavioral symptoms directed toward others** (e.g., hitting, kicking, pushing, scratching, grabbing, abusing others sexually)

Enter Code ☐   **b.**   **Verbal behavioral symptoms directed toward others** (e.g., threatening others, screaming at others, cursing at others)

Enter Code ☐   **c.**   **Other behavioral symptoms not directed toward others** (e.g., physical symptoms such as hitting or scratching self, pacing, rummaging, public sexual acts, disrobing in public, throwing or smearing food or bodily wastes, or verbal/vocal symptoms like screaming, disruptive sounds)

E3.   Overall Presence of Behavioral Symptoms in the last 5 days

Enter ☐ Code   **Were any behavioral symptoms in questions E2 coded 1 or 2?**

0.   **No** ➔ Skip to E6, Rejection of Care

1.   **Yes** ➔ Considering all of E2, Behavioral Symptoms, answer E4 and E5 below

E4.   Impact on Resident

Did any of the identified symptom(s):

Enter ☐ Code   **a.**   **Put the resident at significant risk for physical illness or injury?**

0.   **No**

1.   **Yes**

Enter ☐ Code   **b.**   **Significantly interfere with the resident's care?**

0.   **No**

1.   **Yes**

Enter ☐ Code   **c.**   **Significantly interfere with the resident's participation in activities or social interactions?**

0.   **No**

1.   **Yes**

E5.   Impact on Others

Did any of the identified symptom(s):

Enter ☐ Code   **a.**   **Put others at significant risk for physical injury?**

0.   **No**

1.   **Yes**

Enter ☐ Code   **b.**   **Significantly intrude on the privacy or activity of others?**

0.   **No**

1.   **Yes**

Enter ☐ Code   **c.**   **Significantly disrupt care or living environment?**

0.   **No**

1.   **Yes**

Section E   Behavior

E6.	Rejection of Care—Presence & Frequency

Enter
☐
Code
	In the last 5 days, **did the resident reject evaluation or care** (e.g., bloodwork, taking medications, ADL assistance) **that is necessary to achieve the resident's goals for health and well-being?** Do not include behaviors that have already been addressed (e.g., by discussion or care planning with the resident or family), and/or determined to be consistent with resident values, preferences, or goals.
	    0. **No**
	    1. **Yes, present 1-2 days**
	    2. **Yes, present 3 or more days**

E7.	Wandering—Presence & Frequency

Enter
☐
Code
	In the last 5 days, has the resident wandered?
	    0. **No** ➜ Skip to E9, Change in Behavioral Symptoms
	    1. **Yes, present 1-2 days**
	    2. **Yes, present 3 or more days**

E8.	Wandering—Impact

Enter
☐
Code
	a. **Does the wandering place the resident at significant risk of getting to a potentially dangerous place** (e.g., stairs, outside of the facility)?
	    0. **No**
	    1. **Yes**

Enter
☐
Code
	b. **Does the wandering significantly intrude on the privacy or activities of others?**
	    0. **No**
	    1. **Yes**

E9.	Change in Behavioral or Other Symptoms—Consider all of the symptoms assessed in items E1 through E8.

Enter
☐
Code
	How does resident's current behavior status, care rejection, or wandering **compare to prior assessment?**
	    0. **Same**
	    1. **Improved**
	    2. **Worse**
	    9. **N/A** because no prior MDS assessment

Section F — Preferences for Customary Routine and Activities

F1. Should Interview for Daily and Activity Preferences be Conducted?—Attempt to interview all residents able to communicate. If resident is unable to complete, attempt to complete interview with family member or significant other.

Enter Code

0. **No** (resident is rarely/never understood and family not available) ➔ Instead complete F6, Staff Assessment of Daily and Activity Preferences

1. **Yes** ➔ Continue to F2, Interview for Daily Preferences

F2. Interview for Daily Preferences

Show resident the response options and say: "*While you are in this facility…*"

Coding:

1. **Very important**
2. **Somewhat important**
3. **Not very important**
4. **Not important at all**
5. **Important, but can't do or no choice**
9. **No response or non-responsive**

➔ **Enter Codes in Boxes** ➔

Enter Code
a. *how important is it to you to* **choose what clothes to wear?**

Enter Code
b. *how important is it to you to* **take care of your personal belongings or things?**

Enter Code
c. *how important is it to you to* **choose between a tub bath, shower, bed bath, or sponge bath?**

Enter Code
d. *how important is it to you to* **have snacks available between meals?**

Enter Code
e. *how important is it to you to* **choose your own bedtime?**

Enter Code
f. *how important is it to you to* **have your family or a close friend involved in discussions about your care?**

Enter Code
g. *how important is it to you to* **be able to use the phone in private?**

Enter Code
h. *how important is it to you to* **have a place to lock your things to keep them safe**?

F3. Interview for Activity Preferences

Show resident the response options and say: "*While you are in this facility…*"

Coding:

1. **Very important**
2. **Somewhat important**
3. **Not very important**
4. **Not important at all**
5. **Important, but can't do or no choice**
9. **No response or non-responsive**

➔ **Enter Codes in Boxes** ➔

Enter Code
a. *how important is it to you to* **have books, newspapers, and magazines to read?**

Enter Code
b. *how important is it to you to* **listen to music you like?**

Enter Code
c. *how important is it to you to* **be around animals such as pets?**

Enter Code
d. *how important is it to you to* **keep up with the news?**

Enter Code
e. *how important is it to you to* **do things with groups of people?**

Enter Code
f. *how important is it to you to* **do your favorite activities?**

Enter Code
g. *how important is it to you to* **go outside to get fresh air when the weather is good?**

Enter Code
h. *how important is it to you to* **participate in religious services or practices?**

Section F — Preferences for Customary Routine and Activities

F4. Daily and Activity Preferences Primary Respondent

Enter [ ] Code

Indicate primary respondent for Daily and Activity Preferences (F2 and F3).

1. **Resident**
2. **Family or significant other** (close friend or other representative)
9. **Interview could not be completed** by resident or family/significant other ("No Response" to 3 or more items)

F5. Should the Staff Assessment of Daily and Activity Preferences be Conducted?

Enter [ ] Code

0. **No** (because Interview for Daily and Activity Preferences (F2 and F3) was completed by resident or family/significant other) ➔ Skip to G1, Activities of Daily Living Assistance

1. **Yes** (because 3 or more items in Interview for Daily and Activity Preferences (F2 and F3) were not completed by resident or family/significant other) ➔ Continue to F6, Staff Assessment of Daily and Activity Preferences

F6. Staff Assessment of Daily and Activity Preferences

Do not conduct if Interview for Daily and Activity Preferences (F2 – F3) was completed

Resident Prefers:

Check all that apply.

- [ ] a. **Choosing clothes to wear**
- [ ] b. **Caring for personal belongings**
- [ ] c. **Receiving tub bath**
- [ ] d. **Receiving shower**
- [ ] e. **Receiving bed bath**
- [ ] f. **Receiving sponge bath**
- [ ] g. **Snacks between meals**
- [ ] h. **Staying up past 8:00 p.m.**
- [ ] i. **Family or significant other involvement in care discussions**
- [ ] j. **Use of phone in private**

Check all that apply.

- [ ] k. **Place to lock personal belongings**
- [ ] l. **Reading books, newspapers, or magazines**
- [ ] m. **Listening to music**
- [ ] n. **Being around animals such as pets**
- [ ] o. **Keeping up with the news**
- [ ] p. **Doing things with groups of people**
- [ ] q. **Participating in favorite activities**
- [ ] r. **Spending time away from the nursing home**
- [ ] s. **Spending time outdoors**
- [ ] t. **Participating in religious activities or practices**
- [ ] u. **None of the above**

Section G Functional Status

G1. Activities of Daily Living (ADL) Assistance

Code for most dependent episode in last 5 days:

Coding:

0. **Independent**—resident completes activity with no help or oversight

1. **Set up assistance**

2. **Supervision**—oversight, encouragement or cueing provided throughout the activity

3. **Limited assistance**—guided maneuvering of limbs or other non-weight bearing assistance provided at least once

4. **Extensive assistance, 1 person assist**—resident performed part of the activity while one staff member provided weight-bearing support or completed part of the activity at least once

5. **Extensive assistance, 2 + person assist**—resident performed part of the activity while two or more staff members provided weight-bearing support or completed part of the activity at least once

6. **Total dependence, 1 person assist**—full staff performance of activity (requiring only 1 person assistance) at least once. The resident must be unable or unwilling to perform any part of the activity.

7. **Total dependence, 2 + person assist**—full staff performance of activity (requiring 2 or more person assistance) at least once. The resident must be unable or unwilling to perform any part of the activity.

8. **Activity did not occur** during entire period

→ **Enter Codes in Boxes** →

Enter Code		
☐	a.	**Bed mobility**—moving to and from lying position, turning side to side and positioning body while in bed.
☐	b.	**Transfer**—moving between surfaces including to or from: bed, chair, wheelchair, standing position (**excludes** to/from bath/toilet).
☐	c.	**Toilet transfer**—how resident gets to and moves on and off toilet or commode.
☐	d.	**Toileting**—using the toilet room (or commode, bedpan, urinal); cleaning self after toileting or incontinent episode(s), changing pad, managing ostomy or catheter, adjusting clothes (**excludes** toilet transfer).
☐	e.	**Walk in room**—walking between locations in his/her room.
☐	f.	**Walk in facility**—walking in corridor or other places in facility.
☐	g.	**Locomotion**—moving about facility, with wheelchair if used.
☐	h.	**Dressing upper body**—dressing and undressing above the waist, includes prostheses, orthotics, fasteners, pullovers.
☐	i.	**Dressing lower body**—dressing and undressing from the waist down, includes prostheses, orthotics, fasteners, pullovers.
☐	j.	**Eating**—includes eating, drinking (regardless of skill) or intake of nourishment by other means (e.g., tube feeding, total parenteral nutrition, IV fluids for hydration).
☐	k.	**Grooming/personal hygiene**—includes combing hair, brushing teeth, shaving, applying makeup, washing/drying face and hands (**excludes** bath and shower).
☐	l.	**Bathing**—how resident takes full-body bath/shower, sponge bath and transfers in/out of tub/shower (**excludes** washing of back and hair).

G2.   Mobility Prior to Admission—complete only on admission assessment (A10a = 01)

Enter ☐ Code

a. Did resident have a **hip fracture, hip replacement, or knee replacement** in the 30 days prior to this admission?

   0. **No** ➜ Skip to G3, Balance During Transitions and Walking
   1. **Yes** ➜ Continue to G2b

b. If yes, check all that apply for tasks in which the resident was independent prior to fracture/replacement.

Check all that apply.

- ☐ 1. **Transfer**
- ☐ 2. **Walk across room**
- ☐ 3. **Walk 1 block on a level surface**
- ☐ 4. **Resident was not independent in any of these activities**
- ☐ 9. **Unable to determine**

Recommended MDS 3.0

Section G   Functional Status

G3.   Balance During Transitions and Walking

After observing the resident, **code the following walking and transition items for most dependent** over the last 5 days:

Coding:

0. **Steady at all times**
1. **Not steady, but <u>able</u> to stabilize without human assistance**
2. **Not steady, <u>only able</u> to stabilize with human assistance**
8. **Activity did not occur**

Enter Codes in Boxes

→ Enter Code [ ] a. **Moving from seated to standing position**

Enter Code [ ] b. **Walking** (with assistive device if used)

Enter Code [ ] c. **Turning around** and facing the opposite direction while walking

Enter Code [ ] d. **Moving on and off toilet**

→ Enter Code [ ] e. **Surface-to-surface transfer** (transfer between bed and chair or wheelchair)

G4.   Functional Limitation in Range of Motion

Code for limitation during last 5 days that interfered with daily functions or placed resident at risk of injury.

Coding:

0. **No impairment**
1. **Impairment on one side**
2. **Impairment on both sides**

→ Enter Codes in Boxes

Enter Code [ ] a. **Upper extremity** (shoulder, elbow, wrist, hand)

Enter Code [ ] b. **Lower extremity** (hip, knee, ankle, foot)

G5.   Mobility Devices

Check all that were normally used in the past 5 days:

Check all that apply.

[ ] a. **Cane/crutch**
[ ] b. **Walker**
[ ] c. **Wheelchair (manual or electric)**
[ ] d. **Lower extremity limb prosthesis**
[ ] e. **None of the above** were used

G6.   Bedfast

Enter [ ] Code   **Has the resident been in bed or in recliner in room** for more than 22 hours on at least three of the past 5 days?
   0. **No**
   1. **Yes**

G7.   Functional Rehabilitation Potential—complete only on full assessment (A10a = 01)

Enter [ ] Code   a. **Resident believes he or she is capable of increased independence** in at least some ADL's.
   0. **No**
   1. **Yes**
   9. **Unable to determine**

Enter [ ] Code   b. **Direct care staff believe resident is capable of increased independence** in at least some ADL's.
   0. **No**
   1. **Yes**

Section H Bladder and Bowel

H1. Appliances

Check all that applied in last 5 days:

Check all that apply.
- [ ] **a.** **Indwelling bladder catheter**
- [ ] **b.** **External (condom) catheter**
- [ ] **c.** **Ostomy (including suprapubic catheter, ileostomy, and colostomy)**
- [ ] **d.** **Intermittent catheterization**
- [ ] **e.** **None of the above**

H2. Urinary Toileting Program

Enter [ ] Code

a. **Has a trial of a toileting program (e.g. scheduled toileting, prompted voiding, or bladder training) been attempted** on admission or since urinary incontinence was noted in this facility?
- 0. **No** ➔ Skip to H3, Urinary Continence
- 1. **Yes** ➔ Continue to H2b
- 9. **Unable to determine** ➔ Skip to H2c

Enter [ ] Code

b. **Response**—What was the resident's response to the trial program?
- 0. **No improvement**
- 1. **Decreased wetness**
- 2. **Completely dry** (continent)
- 9. **Unable to determine** or trial in progress

Enter [ ] Code

c. **Current toileting program or trial**—Is a toileting program (e.g. scheduled toileting, prompted voiding, or bladder training) currently being used to manage the resident's urinary continence?
- 0. **No**
- 1. **Yes**

H3. Urinary Continence

Enter [ ] Code

Urinary continence in last 5 days. Select the one category that best describes the resident over the last 5 days:
- 0. **Always continent**
- 1. **Occasionally incontinent** (less than 5 episodes of incontinence)
- 2. **Frequently incontinent** (5 or more episodes of incontinence but at least one episode of continent voiding)
- 3. **Always incontinent** (no episodes of continent voiding)
- 9. **Not rated**, resident had a catheter (indwelling, condom), urinary ostomy, or no urine output for entire 5 days

H4. Bowel Continence

Enter [ ] Code

Bowel continence in last 5 days. Select the one category that best describes the resident over the last 5 days:
- 0. **Always continent**
- 1. **Occasionally incontinent** (one episode of bowel incontinence)
- 2. **Frequently incontinent** (2 or more episodes of bowel incontinence, but at least one continent bowel movement)
- 3. **Always incontinent** (no episodes of continent bowel movements)
- 9. **Not rated,** resident had an ostomy or did not have a bowel movement for the entire 5 days

H5. Bowel Toileting Program

Enter [ ] Code

Is a toileting program currently being used to manage the resident's bowel continence?
- 0. **No**
- 1. **Yes**

H6. Bowel Patterns

Enter [ ] Code

Constipation present in the past 5 days?
- 0. **No**
- 1. **Yes**

Section I Active Disease Diagnosis

Active Diseases in the last 30 days

Cancer
❑ 1. **Cancer** (with or without metastasis)

Heart/Circulation
❑ 2. **Anemia** (includes aplastic, iron deficiency pernicious, and sickle cell)
❑ 3. **Atrial Fibrillation and Other Dysrhythmias** (includes bradycardias, tachycardias)
❑ 4. **Coronary Artery Disease (CAD)** (includes angina, myocardial infarction, ASHD)
❑ 5. **Deep Venous Thrombosis (DVT)/Pulmonary Embolus (PE or PTE)**
❑ 6. **Heart Failure** (includes CHF, pulmonary edema)
❑ 7. **Hypertension**
❑ 8. **Peripheral Vascular Disease/Peripheral Arterial Disease**

Gastrointestinal
❑ 9. **Cirrhosis**
❑ 10. **GERD/Ulcer** (includes esophageal, gastric, and peptic ulcers)
❑ 11. **Ulcerative Colitis/Crohn's Disease/ Inflammatory Bowel Disease**

Genitourinary
❑ 12. **Benign Prostatic Hyperplasia (BPH)**
❑ 13. **Renal Insufficiency or Renal Failure (ESRD)**

Infections
❑ 14. **Human Immunodeficiency Virus (HIV) Infection** (includes AIDS)
❑ 15. **MRSA, VRE, Clostridium diff. Infection/ Colonization**
❑ 16. **Pneumonia**
❑ 17. **Septicemia**
❑ 18. **Tuberculosis**
❑ 19. **Urinary Tract Infection (UTI)**
❑ 20. **Viral Hepatitis** (includes Hepatitis A, B, C, D, and E)
❑ 21. **Wound Infection**

Metabolic
❑ 22. **Diabetes Mellitus (DM)** (includes diabetic retinopathy, nephropathy, and neuropathy)
❑ 23. **Hyponatremia**
❑ 24. **Hyperkalemia**
❑ 25. **Hyperlipidemia** (includes hypercholesterolemia)
❑ 26. **Thyroid Disorder** (Includes hypothyroidism, hyperthyroidism, and Hashimoto's thyroiditis)

Check all that apply.

Musculoskeletal
❑ 27. **Arthritis** (Degenerative Joint Disease (DJD), Osteoarthritis, and Rheumatoid Arthritis (RA))
❑ 28. **Osteoporosis**
❑ 29. **Hip Fracture** (includes any hip fracture that has a relationship to current status, treatments, monitoring. Includes sub-capital fractures, fractures of the trochanter and femoral neck) (last 60 days)
❑ 30. **Other Fracture**

Neurological
❑ 31. **Alzheimer's Disease**
❑ 32. **Aphasia**
❑ 33. **Cerebral Palsy**
❑ 34. **CVA/TIA/Stroke**
❑ 35. **Dementia** (Non-Alzheimer's dementia, including vascular or multi-infarct dementia, mixed dementia, frontotemporal dementia (e.g., Pick's disease), and dementia related to stroke, Parkinson's, Huntington's, or Creutzfeldt-Jakob diseases)
❑ 36. **Hemiplegia/Hemiparesis/Paraplegia**
❑ 37. **Quadriplegia**
❑ 38. **Multiple Sclerosis**
❑ 39. **Parkinson's Disease**
❑ 40. **Seizure Disorder**
❑ 41. **Traumatic Brain Injury**

Nutritional
❑ 42. **Malnutrition** (protein or calorie) or at risk for malnutrition

Psychiatric/Mood Disorder
❑ 43 **Anxiety Disorder**
❑ 44. **Depression** (other than Bipolar)
❑ 45. **Manic Depression** (Bipolar Disease)
❑ 46. **Schizophrenia**

Pulmonary
❑ 47. **Asthma/COPD or Chronic Lung Disease** (includes chronic bronchitis and restrictive lung diseases such as asbestosis)

Vision
❑ 48. **Cataracts, Glaucoma, or Macular Degeneration**

Other
❑ 49. **Additional Diagnoses**
Enter ICD-9 and diagnosis.
a. _____
b. _____
c. _____
d. _____
e. _____
f. _____

Section J Health Conditions

J1. Pain Management (answer for all residents, regardless of current pain level)

At any time in the last 5 days, has the resident:

Enter ☐ Code	a.	**Been on a scheduled pain medication regimen?** 0. **No** 1. **Yes**
Enter ☐ Code	b.	**Received PRN pain medications?** 0. **No** 1. **Yes**
Enter ☐ Code	c.	**Received non-medication intervention for pain?** 0. **No** 1. **Yes**

J2. Should Pain Assessment Interview be Conducted?—Attempt to conduct interview with all residents

Enter ☐ Code	0. **No** (resident is rarely/never understood) ➔ Instead complete J8, Staff Assessment for Pain 1. **Yes** ➔ Continue to J3, Pain Presence

Pain Assessment Interview

J3. Pain Presence

Enter ☐ Code	Ask resident: *"Have you had pain or hurting at any time in the last 5 days?"* 0. **No** ➔ Skip to J9, Shortness of Breath 1. **Yes** ➔ Continue to J4, Pain Frequency 9. **Unable to answer** ➔ Skip to J8, Staff Assessment for Pain

J4. Pain Frequency

Enter ☐ Code	Ask resident: *"How much of the time have you experienced pain or hurting over the last 5 days?"* 1. **Almost constantly** 2. **Frequently** 3. **Occasionally** 4. **Rarely** 9. **Unable to answer**

J5. Pain Effect on Function

Enter ☐ Code	a.	Ask resident: *"Over the past 5 days, **has pain made it hard for you to sleep at night?**"* 0. **No** 1. **Yes** 9. **Unable to answer**
Enter ☐ Code	b.	Ask resident: *"Over the past 5 days, **have you limited your day-to-day activities because of pain?**"* 0. **No** 1. **Yes** 9. **Unable to answer**

Section J Health Conditions

J6. Pain Intensity—Administer **one** of the following pain intensity questions (a or b)

Enter Number	**a. Numeric Rating Scale (00–10)** Ask resident: "*Please rate your worst pain over the last 5 days on a zero to ten scale, with zero being no pain and ten as the worst pain you can imagine.*" (Show resident 0–10 pain scale.) **Enter two-digit response. Enter 99 if unable to answer.**
Enter Code	**b. Verbal Descriptor Scale** Ask resident: "*Please rate the intensity of your worst pain over the last 5 days*" (Show resident verbal scale.) 1. *Mild* 2. *Moderate* 3. *Severe* 4. *Very severe, horrible* 9. **Unable to answer**

J7. Should the Staff Assessment for Pain be Completed?

Enter Code

  0. **No** (resident completed Pain Assessment Interview) ➔ Skip to J9, Shortness of Breath

  1. **Yes** (resident was unable to complete Pain Assessment Interview) ➔ Continue to J8, Staff Assessment for Pain

Staff Assessment for Pain

Do not conduct if Pain Assessment Interview (J2-J6) completed.

J8. Indicators of pain or possible pain.

Select all that apply in last 5 days:

Check all that apply.

- ☐ **a. Non-verbal sounds** (crying, whining, gasping, moaning, or groaning)
- ☐ **b. Vocal complaints of pain** (that hurts, ouch, stop)
- ☐ **c. Facial expressions** (grimaces, winces, wrinkled forehead, furrowed brow, clenched teeth or jaw)
- ☐ **d. Protective body movements or postures** (bracing, guarding, rubbing or massaging a body part/area, clutching or holding a body part during movement)
- ☐ **e. None of these signs observed or documented**

Other Health Conditions—Complete for all residents

J9. Shortness of Breath (dyspnea)

Select all that apply in last 5 days:

Check all that apply.

- ☐ **a. Shortness of breath or trouble breathing with exertion** (e.g. walking, bathing, transferring)
- ☐ **b. Shortness of breath or trouble breathing when sitting at rest**
- ☐ **c. Shortness of breath or trouble breathing when lying flat**
- ☐ **d. None of the above**

J10. Current Tobacco Use

Enter Code

Tobacco use in last 5 days.

  0. **No**
  1. **Yes**

J11. Prognosis

Enter Code

Does the resident have a condition or chronic disease that may result in a **life expectancy of less than 6 months**? (Requires physician documentation. If not documented, discuss with physician and request supporting documentation).

  0. **No**
  1. **Yes**

J12. Problem Conditions. Select all that apply in last 5 days:

Check all that apply.

- ☐ **a. Fever**
- ☐ **b. Vomiting**
- ☐ **c. None of the above**

Section J Health Conditions

J13. Should the Fall History on Admission or Fall History Since Last Assessment be Completed?

| Enter
◻
Code | What assessment type are you completing?
1. **Admission assessment** ➔ Continue to J14, Fall History
2. **Follow-up assessment (quarterly or annual)** ➔ Skip to J15, Any Falls Since Last Assessment |

J14. Fall History on Admission—complete only on admission assessment (A10a = 01)

Enter ◻ Code	**a.**	Did the resident fall one or more times in the **30 days** (i.e., month) before admission? 0. **No** 1. **Yes** 9. **Unable to determine**
Enter ◻ Code	**b.**	Did the resident fall one or more times in the **31–180 days** (i.e., 1–6 months) before admission? 0. **No** 1. **Yes** 9. **Unable to determine**
Enter ◻ Code	**c.**	Did the resident have any **fracture related to a fall in the 6 months** prior to admission? 0. **No** 1. **Yes** 9. **Unable to determine**
Enter ◻ Code	**d.**	Has the resident **fallen since admission** to the nursing home? 0. **No** ➔ Skip to Section K, Swallowing 1. **Yes** ➔ Skip to Section K, Swallowing

J15. Any Falls Since Last Assessment—complete on quarterly, annual, or significant change assessments (A10a = 02, 03, or 04)

| Enter
◻
Code | Has the resident **had any falls since the last assessment?**
0. **No** ➔ Skip to Section K, Swallowing
1. **Yes** ➔ Continue to J16, Number of Falls Since Last Assessment |

J16. Number of Falls Since Last Assessment

Code the number of falls in each category since the last assessment.

Coding: 0. **None** 1. **One** 2. **Two or more**	➔ Enter Codes in Boxes ➔	Enter ◻ Code	**a.**	**No injury**—no evidence of any injury is noted on physical assessment by the nurse or primary care clinician; no complaints of pain or injury by the resident; no change in the resident's behavior is noted after the fall
		Enter ◻ Code	**b.**	**Injury (except major)**—skin tears, abrasions, lacerations, superficial bruises, hematomas and sprains; or any fall-related injury that causes the resident to complain of pain
		Enter ◻ Code	**c.**	**Major injury**—bone fractures, joint dislocations, closed head injuries with altered consciousness, subdural hematoma

Section K | Swallowing and Nutritional Status

K1. Swallowing Disorder

Signs and symptoms of possible swallowing disorder. Check all that applied in last 5 days:

Check all that apply.

- ☐ a. **Loss of liquids/solids from mouth when eating or drinking**
- ☐ b. **Holding food in mouth/cheeks or residual food in mouth after meals**
- ☐ c. **Coughing or choking during meals or when swallowing medications**
- ☐ d. **Complaints of difficulty or pain with swallowing**
- ☐ e. **None of the above**

K2. Height and Weight

☐☐ inches	a. **Height** (in inches). Record most recent height measure since admission. (If height includes a fraction, round up to nearest inch.)
☐☐☐ pounds	b. **Weight** (in pounds). Base weight on most recent measure in last 30 days; measure weight consistently, according to standard facility practice (e.g., in a.m. after voiding, before meal, with shoes off, etc). (If weight includes a fraction, round up to nearest pound.)

K3. Weight Loss

Enter ☐ Code

Loss of 5% or more in last 30 days (or since last assessment if sooner) **or loss of 10% or more in last 180 days.**

- 0. **No** or unknown
- 1. **Yes, on** physician-prescribed weight-loss regimen
- 2. **Yes, not on** physician-prescribed weight-loss regimen

K4. Nutritional Approaches

Check all that applied in last 5 days:

Check all that apply.

- ☐ a. **Parenteral/IV feeding**
- ☐ b. **Feeding-tube**—nasogastric or abdominal (PEG)
- ☐ c. **Mechanically altered diet**—require change in texture of food or liquids (e.g., pureed food, thickened liquids)
- ☐ d. **Therapeutic diet** (e.g., low salt, diabetic, low cholesterol)
- ☐ e. **None of the above**

K5. Percent Intake by Artificial Route—Complete K5 only if K4a or K4b is checked

Enter ☐ Code

a. **Proportion of total calories the resident received through parenteral or tube feedings** in the last 5 days.

- 1. **25% or less**
- 2. **26–50%**
- 3. **51% or more**

Enter ☐ Code

b. **Average fluid intake per day by IV or tube** in last 5 days.

- 1. **500 cc/day or less**
- 2. **501 cc/day or more**

Section L | Oral/Dental Status

L1. Dental

Check all that applied in last 5 days:

Check all that apply.

- ☐ a. **Broken or loosely fitting full or partial denture** (chipped, cracked, uncleanable, or loose)
- ☐ b. **No natural teeth or tooth fragment(s)** (edentulous)
- ☐ c. **Abnormal mouth tissue** (ulcers, masses, oral lesions, including under denture or partial if one is worn)
- ☐ d. **Obvious or likely cavity or broken natural teeth**
- ☐ e. **Inflamed or bleeding gums or loose natural teeth**
- ☐ f. **Mouth or facial pain, discomfort or difficulty with chewing**
- ☐ g. **None of the above were present**
- ☐ h. **Unable to examine**

Section M Skin Conditions

M1. Current Pressure Ulcer

Enter [ ] Code

Did the resident have a pressure ulcer in the last 5 days?

    0. **No** ➔ Skip to M9, Healed Pressure Ulcers

    1. **Yes** ➔ Continue to M2, Stage 1 Ulcers

M2. Stage 1 Ulcers

Report based on highest stage of existing ulcer(s) at its worst; do not "reverse" stage.

Enter [ ] Number

Number of existing pressure ulcers at Stage 1—Intact skin with non-blanchable redness of a localized area usually over a bony prominence. Darkly pigmented skin may not have visible blanching; in dark skin tones only, it may appear with persistent blue or purple hues.

M3. Stage 2 Ulcers

Report based on highest stage of existing ulcer(s) at its worst; do not "reverse" stage.

Enter [ ] Number

a.   **Number of existing pressure ulcers at Stage 2**—Partial thickness loss of dermis presenting as a shallow open ulcer with a red pink wound bed, without slough. May also present as an intact or open/ruptured serum-filled blister.
If number entered = 0 ➔ Skip to M4, Stage 3 Ulcers.

Enter [ ] Number

b.   **Number of these Stage 2 pressure ulcers that were present on admission.** Of the pressure ulcers listed in M3a, how many were first noted at Stage 2 within 48 hours of admission and not acquired in the facility?

Length (cm): [ ][ ].[ ]

c.   **Current length of largest Stage 2 pressure ulcer** (in centimeters).

Width (cm): [ ][ ].[ ]

d.   **Current width of largest Stage 2 pressure ulcer** (in centimeters).

M4. Stage 3 Ulcers

Report based on highest stage of existing ulcer(s) at its worst; do not "reverse" stage.

Enter [ ] Number

a.   **Number of existing pressure ulcers at Stage 3**—Full thickness tissue loss. Subcutaneous fat may be visible but bone, tendon, or muscle are not exposed. Slough may be present but does not obscure the depth of tissue loss. May include undermining and tunneling.
If number entered = 0 ➔ Skip to M5, Stage 4 Ulcers.

Enter [ ] Number

b.   **Number of these Stage 3 pressure ulcers that were present on admission.** Of the pressure ulcers listed in M4a, how many were first noted at Stage 3 within 48 hours of admission and not acquired in the facility?

Length (cm): [ ][ ].[ ]

c.   **Current length of largest Stage 3 pressure ulcer** (in centimeters).

Width (cm): [ ][ ].[ ]

d.   **Current width of largest Stage 3 pressure ulcer** (in centimeters).

M5. Stage 4 Ulcers

Report based on highest stage of existing ulcer(s) at its worst; do not "reverse" stage.

Enter [ ] Number

a.   **Number of existing pressure ulcers at Stage 4**—Full thickness tissue loss with exposed bone, tendon or muscle. Slough or eschar may be present on some parts of the wound bed. Often includes undermining and tunneling.
If number entered = 0 ➔ Skip to M6, Unstageable Ulcers.

Enter [ ] Number

b.   **Number of these Stage 4 pressure ulcers that were present on admission.** Of the pressure ulcers listed in M5a, how many were first noted at Stage 4 within 48 hours of admission and not acquired in the facility?

Length (cm): [ ][ ].[ ]

c.   **Current length of largest Stage 4 pressure ulcer** (in centimeters).

Width (cm): [ ][ ].[ ]

d.   **Current width of largest Stage 4 pressure ulcer** (in centimeters).

Section M Skin Conditions

M6.	Unstageable Ulcers
Enter ☐ **Number**	**a.** **Number of unstageable ulcers**—Full thickness tissue loss in which the base of the ulcer is covered by slough (yellow, tan, gray, green or brown) and/or eschar (tan, brown or black) in the wound bed.
Enter ☐ **Number**	**b.** **Number of these unstageable pressure ulcers that were present on admission.** Of the pressure ulcers listed in M6a, how many were first noted as unstageable within 48 hours of admission and not acquired in the facility?

M7.	Tissue Type for Most Advanced Stage
Enter ☐ **Code**	Select the best description of the most severe type of tissue present in the ulcer bed of the **largest pressure ulcer at the most advanced stage** 1. **Epithelial Tissue**—new skin growing in superficial ulcer. It can be light pink and shiny, even in persons with darkly pigmented skin. 2. **Granulation Tissue**—pink or red tissue with shiny, moist, granular appearance 3. **Slough**—yellow or white tissue that adheres to the ulcer bed in strings or thick clumps, or is mucinous 4. **Necrotic Tissue (Eschar)**—black, brown, or tan tissue that adheres firmly to the wound bed or ulcer edges, may be softer or harder than surrounding skin.

M8.	Worsening in Pressure Ulcer Status Since Last Assessment

Indicate the number of current pressure ulcers that were **not present or were at a lesser stage** on last MDS.
If no current pressure ulcer at a given stage, enter 0.

☐	**a.** **Check here if N/A** (no prior MDS assessment during this stay)
Enter ☐ **Number**	**b.** **Stage 2**
Enter ☐ **Number**	**c.** **Stage 3**
Enter ☐ **Number**	**d.** **Stage 4**

M9.	Healed Pressure Ulcers — Complete on all residents

Indicate the number of pressure ulcers that were noted on last MDS that have completely closed (resurfaced with epithelium).
If no healed PU at a given stage since last assessment, enter 0.

☐	**a.** **Check here if N/A** (no prior MDS assessment during this stay **or** no pressure ulcers on prior assessment)
Enter ☐ **Number**	**b.** **Stage 2**
Enter ☐ **Number**	**c.** **Stage 3**
Enter ☐ **Number**	**d.** **Stage 4**

Section M | Skin Conditions

M10. Other Ulcers, Wounds, and Skin Problems

Check all that apply in the past 5 days:

Check all that apply.

- ☐ **a.** **Venous or arterial ulcer(s)**
- ☐ **b.** **Diabetic foot ulcer(s)**
- ☐ **c.** **Other foot or lower extremity infection** (cellulitis)
- ☐ **d.** **Surgical wound(s)**
- ☐ **e.** **Open lesion(s) other than ulcers, rashes, cuts** (e.g., cancer lesion)
- ☐ **f.** **Burn(s)**
- ☐ **g.** **None of the above** were present

M11. Skin and Ulcer Treatments

Check all that apply in the past 5 days:

Check all that apply.

- ☐ **a.** **Pressure reducing device for chair**
- ☐ **b.** **Pressure reducing device for bed**
- ☐ **c.** **Turning/repositioning program**
- ☐ **d.** **Nutrition or hydration intervention** to manage skin problems
- ☐ **e.** **Ulcer care**
- ☐ **f.** **Surgical wound care**
- ☐ **g.** **Application of dressings** (with or without topical medications) other than to feet
- ☐ **h.** **Applications of ointments/medications** other than to feet
- ☐ **i.** **Application of dressings to feet** (with or without topical medications)
- ☐ **j.** **None of the above** were provided

Section N | Medications

N1. Injections

☐
Days

Record the **number of days that injectable medications were received** during the last 5 days or since admission if less than 5 days.

N2. Medications Received

Check all medications the resident received at any time during the last 5 days or since admission if less than 5 days:

Check all that apply.

- ☐ **a.** **Antipsychotic**
- ☐ **b.** **Antianxiety**
- ☐ **c.** **Antidepressant**
- ☐ **d.** **Hypnotic**
- ☐ **e.** **Anticoagulant** (warfarin, heparin, or low-molecular weight heparin)
- ☐ **f.** **None of the above** were received

Section O — Special Treatments and Procedures

O1. Special Treatments and Programs

Check treatments or programs received during the last 14 days.

Check all that apply.

	Cancer Treatment			Other
☐	**a.** Chemotherapy		☐	**g.** IV medications
☐	**b.** Radiation		☐	**h.** Transfusions
	Respiratory Treatments		☐	**i.** Dialysis
☐	**c.** Oxygen therapy		☐	**j.** Hospice care
☐	**d.** Suctioning		☐	**k.** Respite care
☐	**e.** Tracheostomy care		☐	**l.** **Isolation or quarantine** for active infectious disease does not include standard body/fluid precautions)
☐	**f.** Ventilator or respirator			
			☐	**m.** **None of the above** treatments or programs received

O2. Influenza Vaccine

Enter [ ] Code

a. Did the **resident receive the Influenza Vaccine in this facility** for this year's Influenza season (October 1 through March 31)?

- 0. **No** ➔ Continue to O2b
- 1. **Yes** ➔ Skip to O3, Pneumococcal Vaccine
- 9. **Does not apply because assessment is between July 1 and Sept 30** ➔ Skip to O3, Pneumococcal Vaccine

Enter [ ] Code

b. If Influenza Vaccine not received, state reason:

- 1. **Not in facility** during this year's flu season
- 2. **Received outside of this facility**
- 3. **Not eligible**—medical contraindication
- 4. **Offered and declined**
- 5. **Not offered**
- 6. **Vaccine on order but not yet received in the facility**
- 7. **None of the above**

O3. Pneumococcal Vaccine

Enter [ ] Code

a. Is the resident's **Pneumococcal Vaccination up to date?**

- 0. **No** ➔ Continue to O3b
- 1. **Yes** ➔ Skip to O4, Therapies

Enter [ ] Code

b. If Pneumococcal Vaccine not received, state reason:

- 1. **Not eligible**—medical contraindication
- 2. **Offered and declined**
- 3. **Not offered**

O4. Therapies

Record the **number of days each of the following therapies was administered** for at least 15 minutes a day in the last 7 days (column I). Enter 0 if none or less than 15 minutes daily. For Therapies a–c also record the total number of minutes (column II).

I. Days	II. Minutes		
[ ]	[ ] [ ] [ ]	**a.**	Speech-language pathology and audiology services
[ ]	[ ] [ ] [ ]	**b.**	Occupational Therapy
[ ]	[ ] [ ] [ ]	**c.**	Physical Therapy
[ ]		**d.**	Respiratory Therapy
[ ]		**e.**	Psychological Therapy (by any licensed mental health professional)
[ ]		**f.**	Recreational Therapy (includes recreational and music therapy)

Section O Special Treatments and Procedures

O5. Nursing Rehabilitation/ Restorative Care

Record the number of days each of the following rehabilitative or restorative techniques was administered (for at least 15 minutes a day) in the last 7 calendar days (enter 0 if none or less than 15 minutes daily).

Number of Days	Technique		Number of Days	
☐	a.	Range of motion (passive)		
☐	b.	Range of motion (active)		
☐	c.	Splint or brace assistance		

Number of Days	Training and skill practice in:	Number of Days	
☐	d. Bed mobility	☐	h. Eating or swallowing
☐	e. Transfer	☐	i. Amputation/prostheses care
☐	f. Walking	☐	j. Communication
☐	g. Dressing or grooming		

O6. Physician Examinations

☐☐ Days — Over the last 14 days, **on how many days did the physician (or authorized assistant or practitioner) examine the resident?**

O7. Physician Orders

☐☐ Days — Over the last 14 days, **on how many days did the physician (or authorized assistant or practitioner) change the resident's orders?**

Section P Restraints

P1. Physical Restraints—Code for last 5 days:

Physical restraints are any manual method, physical or mechanical device, material or equipment attached or adjacent to the resident's body that the individual cannot remove easily, which restricts freedom of movement or normal access to one's body.

Coding:

0. **Not used**
1. **Used less than daily**
2. **Used daily**

Enter Codes in Boxes

Used in Bed

→ Enter Code ☐ — a. **Bed rail** (any type; e.g., full, half, one side)

Enter Code ☐ — b. **Trunk restraint**

Enter Code ☐ — c. **Limb restraint**

Enter Code ☐ — d. **Other**

Used in Chair or Out of Bed

Enter Code ☐ — e. **Trunk restraint**

Enter Code ☐ — f. **Limb restraint**

→ Enter Code ☐ — g. **Chair prevents rising**

Enter Code ☐ — h. **Other**

Section Q | Participation in Assessment and Goal Setting

Q1. Participation in Assessment

Enter [ ] Code   **a.** **Resident**
- 0. **No**
- 1. **Yes**

Enter [ ] Code   **b.** **Family or significant other**
- 0. **No**
- 1. **Yes**
- 9. **No family or significant other**

Q2. Return to Community

Ask resident (or family or significant other if resident unable to respond): *"Do you want to talk to someone about the possibility of returning to the community?"*

Enter [ ] Code
- 0. **No**
- 1. **Yes**
- 9. **Resident unable to respond and family or significant other not available**

Q3. Resident's Overall Goals—complete only on admission assessment (A10a = 01)

Enter [ ] Code   **a.** **Select one for resident's goals established during assessment process.**
- 1. **Post acute care**—expects to return to live in community
- 2. **Post acute care**—expects to have continued NH needs
- 3. **Respite stay**—expects to return home
- 4. **Other reason for admit**—expects to return to live in community
- 5. **Long term care** for medical, functional, and/or cognitive impairments
- 6. **End-of-life care** (includes palliative care and hospice)
- 9. **Unknown or uncertain**

Enter [ ] Code   **b.** **Indicate information source for this item**
- 1. **Resident**
- 2. **Family or significant other**
- 3. **Neither**

Section T | Therapy Supplement for PPS

T1. Ordered Therapies

Enter [ ] Code   **a.** Has physician ordered any of the following therapies to begin in first 14 days of stay: physical therapy, occupational therapy, or speech pathology service?
- 0. **No**
- 1. **Yes**

Enter Number [ ][ ]   **b.** Through day 15, provide an estimate of the number of days when at least 1 therapy service can be expected to have been delivered

Enter Number [ ][ ][ ][ ]   **c.** Through day 15, provide an estimate of the number of therapy minutes (across the therapies) that can be expected to be delivered

Nursing homes (NHs) are particularly important and challenging care sites because the vulnerable adults who reside there often have significant cognitive, functional, and sensory deficits and are at high risk for declines in health and function. In April 2003, in response to changes in nursing home care, resident characteristics, and advances in resident assessment methods, the Centers for Medicare & Medicaid Services (CMS) initiated a contract to revise and test Version 3.0 of the Minimum Data Set (MDS). A joint RAND/Harvard team engaged in a careful iterative process that incorporated provider and consumer input, expert consultation, scientific advances in clinical knowledge about screening and assessment, intensive item development by a national VHA consortium, and a national trial in 71 community and 19 Veteran's Administration (VA) NHs to create a revised MDS 3.0.

Improving the reliability, accuracy, and usefulness of the MDS has profound implications for NH care and public policy. Almost 10 million MDS assessments are entered into the national NH database annually. Medicare's Prospective Payment System and the Nursing Home Public Reporting Quality Initiative rely on data from these reports. The state survey process may use quality indicators derived from the MDS, and some states use the MDS for case-mix based Medicaid reimbursement.

Improving the reliability, accuracy, and usefulness of the MDS also has profound implications for measuring and improving the quality of NH care. At the system level, the MDS data set can inform longitudinal assessments of NH population needs. At the resident level, the MDS is a potentially powerful mechanism to standardize assessment and facilitate care planning and management. However, the full potential of the MDS can be realized only if providers do not view it as an onerous data collection burden and if the information obtained is accurate.

History of MDS

In 1986, the IOM issued its report on quality of care in U.S. nursing homes.[2] The report argued that, too often, NH residents' co-morbidities and functional impairment were not addressed because these problems were either not identified or were attributed to "old age" and dementia. The report recommended shifting the nation's strategy for monitoring and improving NH care from structural evaluations of NHs to systematic and standardized assessments of resident's cognitive, functional, and emotional needs. Such assessments were seen as the crucial foundation for developing appropriate care plans and interventions. The subsequent passage of NH legislation in the 1987 Omnibus Budget Reconciliation Act was a seminal event in NH policy. The legislation mandated development of a resident assessment instrument describing important domains of resident health and quality of life. One result of that legislation was the implementation of the Minimum Data Set (MDS), an assessment containing more than 450 items designed to assess the functional status, mood, and medical conditions of NH residents. The MDS is part of the longer Resident Assessment Instrument that also includes Resident Assessment Protocols (RAPs).

Chapter 2: MDS 3.0 Background

The MDS was introduced into community NHs in 1991. In 1998, the VHA began to implement the MDS in its NHs. All Medicare certified NHs and VA NHs are now required to complete the MDS assessment on every resident near the time of admission, at regular intervals throughout the resident's stay, and whenever there is a significant change in the resident's status. Many MDS item responses are used to identify issues requiring more intensive assessment or intervention as outlined in the Resident Assessment Protocols (RAPs) that accompany the MDS.

MDS Successes and Challenges

The introduction of the MDS has been temporally associated with improvements in some outcomes and processes of care in U.S. NHs.[3,4] Since its introduction, MDS has been revised (MDS 2.0) and its applications have expanded to include quality indicator reporting [5] and determination of post acute care reimbursement.[6] Some scales that researchers can calculate from MDS 2.0 data have been tested [7-9] and have performed well. Some states also use the MDS as the basis for NH Medicaid reimbursement.

Both consumers and providers have expressed concerns about the reliability and validity of the MDS. Community NHs now have over 16 years of combined experience with the MDS 1.0 (6 years) and MDS 2.0 (10 years) and give it mixed reviews. One issue has been the difference between the tool's efficacy (performance in ideal circumstances), and effectiveness (performance in actual conditions).[10,11] Research evaluations show that the MDS instrument has overall acceptable inter-rater reliability when data are collected by trained research nurses whose only responsibilities are data collection.[3,4,12] However, comparisons of ratings from trained research nurses versus facility-nurses have been mixed.[1,5] Some studies show acceptable reliability for some items,[5,13,14] others show important disagreement.[15] Even the trial showing acceptable average reliability had considerable variation in agreement across items and facilities.[5] Many users and government agencies also express concerns about the instrument's length and data collection burden heightening concerns about data quality and validity.[1,11]

Concerns also have been voiced about how MDS items relate to the physical and emotional domains of health and quality of life and whether items reflect the full range of NH residents. Important domains within the tool have failed to show acceptable validity when tested.[16-19] In addition, many have argued that the MDS does not adequately assess resident quality of life.[20] Critics also argue that because the MDS does not include items that require direct questioning of residents,[21] it fails to obtain critical information.

To some extent, the reliability and validity issues of the MDS relate to the fundamental challenges of designing a new tool to evaluate the populations that reside in NHs. Initial MDS development in the late 1980s was a Herculean task and represented a ground-breaking effort. At the time the MDS was developed, the evidence base for geriatric assessment and nursing home care was more limited. Since the basic MDS items were established, our understanding of assessment and screening has advanced significantly.[21] These advances are particularly salient because NH residents have significant disease burden[22] and functional dependence,[23] placing them at high risk for serious declines in health and function.[2,24] The extraordinary large proportion of highly dependent residents

places heavy demands on NH staff and may affect their ability to conduct careful and thorough assessments.

High levels of cognitive impairment (CI) in the long-stay segment of this population present an additional challenge. Seventy-one percent of residents are reported to have at least some form of memory loss, and 51% have a diagnosis of dementia.[23] In designing the MDS 2.0, the developers wanted to ensure that all residents, regardless of cognitive status, were assessed. As a consequence, instead of creating one set of items for persons capable of responding and one for persons who were not, they tried to create items that could accommodate both. It was left to the instruction manual to encourage the evaluator to consider the resident's input, but the items were designed so that, at least theoretically, they could be completed based solely on staff observation and chart review. Observations of nursing home assessments reveal this to be a common default option in facilities. This approach inadvertently resulted in excluding the voice of an estimated 50% or more of NH residents, including some with mild to moderate CI, who, if provided appropriately structured questions, can provide stable information about preferences, satisfaction, or daily life events.[25-28]

Goals for Revising the MDS

The overarching goals of this project were to improve and update the MDS in order to enhance individual care planning and outcome measurement. The research effort was designed to address many of the issues and challenges previously identified and to provide a solid empirical foundation for examining revisions to the MDS before they were implemented. For some items and sections, the challenges could be addressed by minor modifications to the form or to item wording and instructions. For other sections, addressing the issues required a more extensive update and revision.

Our research objectives were to provide scientific input to improve the accuracy of MDS 3.0 assessments and to enhance MDS 3.0 performance and clinical utility as a tool to improve NH care.

The central methodological challenge to successfully revising the MDS is establishing the reliability and performance of items in the nursing home setting. Creating an efficacious revision that will perform well in real facility conditions[29] requires development of items and instructions that are clear and accessible to facility staff members, who vary in their assessment training. It also means that evaluations of MDS revisions must consider both the performance of gold-standard evaluators and performance by actual facility staff. In addition, revisions should consider enhancing input from the diverse populations who use NH services. Finally, because demands on NH staff time are great, evaluation of the tool's real performance must consider the time required to complete the instrument.

In this chapter we describe the purposes, persons, organizations, and processes involved in the revision and evaluation of the MDS 3.0.

Evaluation Team

The evaluation team, led by RAND and the Harvard Medical School Department of Health Care Policy, included the Colorado Foundation for Medical Care, Carelink, the Kleimann group, and RRS Healthcare Consulting Services. After the project began, the scope of work was modified to include a national Veterans Health Administration NH research collaborative comprised of researchers from the Greater Los Angeles, Philadelphia, Bedford and Atlanta VAs.

Goals and Evaluation Criteria

The Centers for Medicare & Medicaid Services (CMS) and the evaluation team worked with stakeholders to identify the salient issues that needed to be addressed in revising the MDS. We identified 5 basic goals:

1. **Improve the clinical relevance and accuracy** of the MDS. This goal supports the primary legislative intent that MDS be a tool to improve clinical assessment and thereby care quality in the United States. We proposed that this objective could best be accomplished by building on the experience of MDS users, improving the clarity of items and accuracy of assessments, and incorporating advances in assessment science. In addition to improve communication and care coordination across settings, we proposed to consider assessment and screening items used in other healthcare settings.

2. **Increase the voice of the resident.** This goal directly relates to enhancing the relevance of the tool and moving toward improved assessment and resident-centered care.

3. **Improve User Satisfaction.** This goal recognizes that provider attitudes are key determinants of quality improvement implementation. Negative provider attitudes toward the MDS 2.0 are often cited as a reason that NHs have not full implemented it in targeted care planning.

4. **Increase the efficiency of reports** thereby enabling useful information to be obtained with the least possible provider burden.

5. **Maintain the program ability of CMS** to use MDS data for quality measurement and payment (resource utilization groups-III [RUGs-III] classification).

Chapter 3: Methods to Develop and Test MDS 3.0

Structure of the Project

Development and testing of the Minimum Data Set (MDS) 3.0 began in 2003 and concluded in early 2008. The RAND/Harvard team attempted to design a revision and evaluation of the new instrument that objectively considered the implications of proposed changes and to identify trade-offs where they existed. Many individuals and organizations have strong opinions—both opposition and support—about the MDS 2.0. These opinions will influence how revisions are viewed and provider willingness to use items in care planning. Therefore, we sought input from a wide range of stakeholders. We wanted to view the MDS from as many perspectives as possible in order to assess both its overall structure and to evaluate individual items. As a consequence, we designed a five-phase effort:

1. We gathered information from stakeholders and other experts
2. We worked with a national consortium of VHA researchers to revise and test 8 sections of MDS identified after reviewing input from Phase 1
3. We integrated the results of the first two phases to field a pilot test of the MDS 3.0 in a sample of community and VA nursing homes, and revised the draft MDS 3.0 based on results from the pilot
4. We conducted a national field test of the revised MDS 3.0 and analyzed the results
5. We integrated the analysis into our final revision of the MDS 3.0

Below we briefly describe each of these phases.

Phase 1: Obtain Stakeholder and Expert Feedback on MDS 2.0 and Proposed MDS 3.0

To begin the revision process, CMS worked with content experts and small working groups to explore possible revisions to the MDS. Based on experience with the MDS and this input, CMS released a draft MDS 3.0 for public comment in April 2003. RAND and its evaluation team subsequently obtained and synthesized stakeholder feedback and input on the MDS 2.0 and the initial draft MDS 3.0.

Matrix of Written Commentaries

CMS posted the April 2003 draft MDS 3.0 on a publicly available web site and invited all interested parties to submit written comments. RAND conducted content analysis of these comments. More than 1265 unique comments were received from 144 different groups or individuals. The comments included suggested modifications to the MDS, recommendations to add or delete items, and policy questions or statements. The summary of the content analyses is shown in Table 3.1.

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Table 3.1 - Summary of Written Commentaries

Type of Comment	# of Unique Comments
Modification suggested	290
Questions/ Instructions	214
Additional item suggested	213
Policy question/statement	158
Favorable	148
Delete or replace	112
Other negative comment	86
Other	46

Town Hall Meeting

Interested parties were provided an open forum in which they could hear plans for the evaluation and provide comment on the MDS. The meeting was held at CMS offices in Baltimore, Maryland, in June 2003. Teleconference was also made available. Seventy-seven persons registered attendance and 426 conference call-ins were recorded. All oral comments were transcribed and reviewed by the research team.

Technical Expert Panel

The Commonwealth Fund provided RAND a grant to convene a national panel of NH experts. Forty-five groups nominated over 150 individuals for possible inclusion in this technical expert panel (TEP) or the subsequent validation panel (described below). The research team reviewed the nominees' qualifications and resumes, aiming to identify a panel with a wide range of perspectives and with experience in NH care delivery, management, and quality improvement across MDS items. The TEP met for two days in August, 2003 at RAND's Washington Office.

Panel members provided valuable input for the MDS revisions. We asked the TEP to take a broad view of the purpose of the MDS, and we drew on the extensive combined experience of the TEP to identify the concepts that they thought were important. During their two-day meeting, they discussed the current function of the MDS and goals for the upcoming revision. They also discussed items that were identified as most problematic in Townhall commentaries and written feedback. Finally, they rated the utility and importance of MDS constructs. Panel members are listed in Table 3.2.

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Table 3.2 - MDS 3.0 Technical Expert Panel Represented a Wide Range of Organizations

Panelist Name	Affiliation
Sarah Greene Burger, MPH, RN	National Citizen's Coalition for Nursing Home Reform
Diane Carter, RN, MSN	American Association of Nurse Assessment Coordinators
Anne Deutsch, CCRN, PhD	Rehabilitation Institute of Chicago
Sandy Fitzler, BSN	American Health Care Association
Irene Fleshner, RN, MHSA, CHE	Senior Clinicians Group
David Gifford, MD	Rhode Island Quality Partners
Christa Hojlo, DNSc	VA Nursing Home Service
Ruta Kadonoff, MHS	American Association of Homes and Services for the Aging
Sally Kaplan, PhD	MedPAC
Courtney Lyder, ND, FAAN	University of Virginia, School of Nursing
Cherry Meier, RN, MSN, LNHA	National Hospice and Palliative Care Organization
Sue Nonemaker, RN, MS	Hebrew Rehabilitation Center for the Aged
Joe Ouslander, MD	Emory University
Peter Rabins, MD, MPH	Johns Hopkins University Hospital
Naomi Salamon, RN	North Shore University Hospital for Extended Care and Rehabilitation
Judith Salerno, MD, MS	National Institute on Aging
Eric Tangalos, MD	Mayo Clinic

Short-term goals identified by the TEP included prioritizing MDS's function as a clinical tool and enhancing its efficiency to screen for important issues. The TEP identified clinical meaningfulness as another immediate goal. Comments included observations about the difficulty and lack of clarity of some items, and the lack of a clear link to care planning. Ideally, MDS items would link with relevant clinical care in such a way that staff could see how the screening could make their work more efficient.

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In discussing efficiency, the TEP emphasized that it was more important to have items be clear and relevant than to have them be short or on fewer pages. The TEP recommended that the MDS be limited to items that would improve initial screening for common and often-missed geriatric syndromes. Follow-up assessments or care planning activities should be addressed in either RAPs or facility care plans. The TEP also discussed long-range goals for future MDS revisions, including moving toward standardized nomenclature.

The TEP also provided feedback on the strengths and weaknesses of the existing Resident Assessment Protocols (RAPs). The TEP felt that many longer assessments and evaluations would be better placed in the RAPs than in the MDS and identified a need to improve the RAPs so that they were more clinically relevant to staff. They conveyed facilities' concerns about the volume of RAPS that could be triggered on many residents who have multiple conditions. TEP members reported that, as a result, some facilities might either avoid selecting triggers in the MDS or use computer-generated forms that do not link to actual care.

Many TEP members recognized the promise of computer driven technology. However, the clear consensus was that few facilities were positioned to capitalize or maintain the needed electronic medical record technology without a large infusion of resources from CMS. In addition, few TEP members were convinced that existing technology afforded the desired flexibility. Many believed that, even if the capital and maintenance costs were addressed, staff training and re-orientation would be considerable. Infusion and incorporation of computer-based technology was defined as a distant (15-year) objective to be sought after NHs have incorporated and developed the expertise in electronic medical records (EMRs) that would permit them to populate the items in the MDS directly from the EMR.

Ranking of core concepts

To provide a greater understanding of how stakeholders viewed the utility and need for sections in the MDS, the research team identified 52 unique constructs or concepts in the MDS 2.0 or draft 3.0 and asked the TEP to rate the utility/importance of each construct for (a) the clinical care of a person requiring basic nursing facility services, (b) the clinical care of a person requiring skilled nursing or rehabilitation after an acute illness, (c) costs or resource use, and (d) understanding facility quality. To rank the concepts, the TEP members used a 5-point Likert scale from 1 (not at all important) to 5 (extremely important).

In final voting on the core constructs in the MDS, panel ratings of the overall mean clinical importance of the 52 constructs did not differ significantly for long-stay residents vs. post-acute care (4.0 vs. 3.8). In the TEP rating for nearly every construct, clinical importance out-ranked cost and quality measurement. The sole exception was "estimated length of stay," which the TEP judged important only for post-acute care residents.

Overall, the TEP ranked the following constructs as the most important:

- Pain assessment
- Falls
- Cognitive function
- Activities of daily living
- Behavior
- Delirium
- Continence
- Pressure ulcer
- Potential for ADL rehabilitation

The TEP ranked the following constructs as least important:

- Time awake
- Past roles
- Number of physician orders
- Number of physician visits

TEP Review of MDS Feedback

We also asked the TEP to review sections of the MDS that generated significant commentary in written feedback and town hall commentary. This discussion provided useful insights into issues surrounding the domain and possible alternative assessment approaches. The domains included:

- Quality of life
- Diagnoses
- Swallowing
- Oral status
- Pressure ulcers
- Therapies

Validation Panel

RAND convened a second panel, whose purpose was to evaluate the validity and feasibility of specific proposed MDS item revisions. The research team again selected from the list of 150 nominations for expert panel membership, aiming to identify those with broad experience with NH care, evidence-based NH research, and scientific review. The panel members are listed in Table 3.3. A member of the TEP also served on the Validation Panel in order to ensure communication between the two panels.

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Table 3.3 - Validation Panel Members and Their Affiliations

Panelist Name	Organization
Dan Berlowitz, MD, MPH	Boston University & Bedford VHA
Barbara Bowers, RN, PhD	University of Wisconsin
Richard Della Penna, MD	Kaiser Permanente Aging Network
Marcy Harris, RN, PhD	Mayo Clinic
Ira Katz, MD, PhD	University of Pennsylvania & Philadelphia VHA
Paul Katz, MD	University of Rochester
Rosemary Lubinski, EdD	University at Buffalo
David Mehr, MD, MS	University of Missouri
Vince Mor, PhD	Brown University
Christine Ann Mueller, RN, PhD	University of Minnesota
Patricia Parmelee, PhD	Emory University & Atlanta VHA
Margaret Schenkman, PT, PhD	University of Colorado
Neville Strumpf, RN, FAAN, PhD	University of Pennsylvania
Eric Tangalos, MD	Mayo Clinic
Christie Teigland, PhD	NY Assoc. of Homes & Services for Aging
Sheryl Zimmerman, MSW, PhD	University of North Carolina at Chapel Hill

The validation panel was provided with a literature synthesis for several key sections of the MDS and available data on reliability for MDS 2.0 and MDS PAC items. The research team summarized written feedback and TEP input for the panel. The team also asked the Validation Panel to consider several important principles that had been frequently highlighted in the written feedback on the draft MDS 3.0 and in the TEP's discussions. These principles were:

1. Achieve validity for intended use as a screening item
2. Increase efficiency, decrease burden
3. Avoid unnecessary complexity
4. Standardize look-back periods when possible

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The research team defined validity and feasibility for the Validation Panel for purposes of rating individual items. At item was valid for NH residents based on whether the measure accomplished its intended purpose for assessment and was accurate, sensitive for identifying the target conditions, specific and explicit, and important as a care planning link. An item was feasible to collect, based on the ability of the nursing home staff to accurately complete the item, the reasonableness of training requirements, and the staffing requirements were consistent with those found in the average community NH.

The Validation Panel used a modified-Delphi process to provide quantitative assessment of the validity and feasibility of 438 proposed MDS items. This expert panel methodology is a well-studied quantitative approach that synthesizes the scientific literature and current expert knowledge in order to specify appropriate measures.[30,31] The method shows acceptable inter-panel reliability.[32-34] The modified-Delphi methodology is particularly useful in situations where research findings must be translated from narrowly focused studies to larger populations. Resulting indicators have been shown to predict care outcomes.[34-36]

After reviewing the background materials they were provided, the validation panel voted on the items by confidential ballot prior to the meeting. This voting was followed by a two day face-to-face meeting for discussion, after which the panel members re-voted by confidential ballot. The research team also conducted follow-up calls with the members of the Validation Panel to address specific topics and challenges.

For each item, we analyzed the median panel rating and performed a statistical test of the categorical dispersion of panelists' votes across an item. An item was considered valid if the median validity rating was in the 7 – 9 range and the panelists' votes evidenced statistically significant agreement. If the median rating for an item was in the 7 – 9 range but a significant number of panelists voted the item in the lowest tertile for validity (1 – 3), then disagreement was noted and the item was not considered valid. The feasibility votes were treated likewise.

Phase 2: VHA Validation Protocol Research

Relationship to CMS Revision of MDS

On December 31, 2003, a Memorandum of Understanding (MOU) was signed between the Veterans Health Administration (VHA) and CMS to work together to develop and evaluate revisions to the MDS 3.0. This collaboration recognized the shared interests of the two agencies in improving the reliability and accuracy of the MDS.

In October, 2004, the national VA Health Services Research and Development Service (VA HSR&D) funded a large research project entitled "Pilot Testing and Validation of Changes to the Minimum Data Set (MDS) for Veteran Administration (VA) Nursing Homes" that aimed to contribute to the MDS 3.0 revision.

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Through this VA HSR&D project, a research consortium of nationally recognized leaders in long term care was created to pilot test and improve the validity of 8 key sections of MDS 3.0 to support efficient screening and individual care planning. The VHA research team, along with RAND and Harvard worked with CMS to review information obtained from Phases 1 and 2 and identify the 8 areas of particular importance to resident health-related quality of life and most needing revision.

The final national MDS field trial was delayed to align CMS's MDS work with this research. This alignment allowed the validity, reliability, and feasibility of items from VHA pilot testing to be further tested in a national sample of VA and community NHs.

During the VHA validation protocol work, the national CMS project continued to revise items to incorporate the stakeholder feedback from Phase 1; conduct further literature review; work with VHA and Assistant Secretary of (Health and Human Services for) Planning and Evaluation (ASPE) contractors on standardized nomenclature; coordinate and work with the development and pilot testing of alternative MDS items and validation protocols; and gather ongoing feedback from stakeholders.

Veterans Health Administration Design of Pilot and Validation Activities

Improving the quality of NH care is a high priority within the VHA. The VHA is both a provider and purchaser of NH care, operating NHs throughout the United States and purchasing contract care through community NHs. As part of its ongoing efforts to meet the needs of NH residents, the VA National Nursing Home Care Service voluntarily implemented the MDS in its system of NHs.

The VA HSR&D-funded MDS pilot testing and validation project aimed to contribute to the MDS 3.0 revision. The VHA team proposed to test, within VA NHs, the validity, and performance of eight new or revised sections of the MDS: mental status, diagnostic coding, delirium, pain, falls, depression, behavior disorders, and quality of life. These areas were selected from those identified by stakeholders and external testing as most needing additional development or testing and that could feasibly undergo significant testing or revision in the available time frame.

The national VHA NH research team (Table 3.4) coordinated with the RAND and Harvard team throughout the pilot testing and revision phase.

Table 3.4 - Participants in VHA MDS Pilot Testing

Lead Research Team - VA HSR&D Center of Excellence, Los Angeles - Dr. Debra Saliba, PI			
Research Group	**Key Personnel**	**General Area**	**Specific Topic Area**
Bedford VHA & Center for Health Outcomes Quality and Economics Research	Dan Berlowitz, MD Elaine Hickey, RN	• Medical Conditions & Complications	• Diagnostic Coding • Delirium
Atlanta VHA & VA Geriatric Research Education and Clinical Care	Joe Ouslander, MD Pat Parmelee, PhD	• Geriatric Syndromes	• Pain • Falls
Philadelphia VHA & MIRECC	Ira Katz, MD, PhD Joel Streim, MD Katy Ruckdeschel, PhD Suzanne DiFilippo, RN	• Mental Health	• Depression • Behavior Disorders
VHA Greater Los Angeles & Center of Excellence for the Study of Health Care Provider Behavior	Debra Saliba, MD, MPH Karl Lorenz, MD Josh Chodosh, MD	• Residential Life Quality • Mental Status	• Customary Routine • Pain & other Symptoms • Goals of Care • Mental Status
Harvard Medical School	Joan Buchanan, PhD Alan Zaslavsky, PhD	• Evaluation & Analysis	

The VHA project had 5 primary phases:

1. Refinement of candidate MDS items
2. Condition-specific protocol development and pilot testing
3. Protocol integration and pilot testing
4. National VHA validation & reliability testing
5. Data analysis and recommendations

In Phase 1, the 4 regional groups reviewed CMS provider feedback, convened additional work groups as needed, proposed item revisions, and identified common pilot elements for regional testing. In Phase 2, each of 4 regional research groups developed, pilot tested, and refined MDS items and related validation protocols for 2 to 3 conditions. In Phase 3 (which coincided with CMS Phase 3), the lead team integrated the resulting 8 refined condition-specific protocols into the MDS and into national data collection protocols. The Colorado Foundation for Medical Care, a quality improvement organization (QIO), joined the four regional research groups to pilot test the resulting integrated protocol for feasibility and clarity. In Phase 4, (which coincided with CMS Phase 4), the integrated protocols were used to test the revised items in a national sample of 19 VA NHs.

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Contributions from the Veterans Health Administration Pilot

The pilot work from the VHA National Nursing Home Research Collaborative yielded important findings for several key sections of the MDS. This research work, combined with the inputs above, allowed us to go to national testing with the best possible tool that could be achieved in the time for the study. These findings, which were further tested in the community national sample, are mentioned here. More detail is provided in the discussion of rationale for specific revisions in Chapters 5-11.

- **Mental status assessment:** A simple performance-based screen can be used by NH staff, simplifying assessments and allowing inclusion of cognitive items with greater recognition in other settings, improving communication with providers.

- **Delirium:** A standardized delirium assessment, the Confusion Assessment Method (CAM), validated in older hospitalized adults, is feasible for use in the NH setting.

- **Mood:** Direct resident interview for signs and symptoms of depression is feasible, even in residents with moderate cognitive impairment. The VHA research showed that nursing homes could use the PHQ-9, allowing inclusion of a standardized mood assessment used in other settings.

- **Behavior:** Improvements to these items allow clearer language, symptom grouping, and consideration of the impact of behaviors, while meeting concerns expressed by consumers and providers about the need for language that avoided stigmatization.

- **Quality of Life:** Cognitive interviews with residents revealed that rephrasing questions about quality of life to elicit simple yes/no responses did not simplify the questions for residents. The resident Preference Assessment Tool was developed to systematically solicit resident preferences related to quality of life domains, including activity preferences. Residents with moderate cognitive impairment were able to respond to questions about the importance of particular quality-of-life domains and activities.

- **Balance:** The Validation Panel identified this as an important section for revision because abnormal balance and gait place residents at increased risk for falls. The items were refined to guide NHs in identifying components of gait that relate to fall risk.

- **Diagnoses:** Diagnostic categories and diagnoses relevant to NH resident care planning were identified using prevalence data and expert input. Enhanced algorithms for identifying active diagnoses improved agreement between research nurses and clinical nurses; the algorithms were included in the instruction manual for the national field trial.

- **Pain:** Direct resident interview about pain is feasible, even in residents with moderate and moderately severe cognitive impairment, a finding consistent with multiple prior studies in NH settings. Repeated surveys of residents with different levels of cognitive impairment found that residents were able to recall whether they had had pain in the preceding 5 days. Resident report of the effect of pain on daily function added information to severity ratings.

- **Falls:** A revised MDS falls item for quarterly assessments had improved sensitivity for detecting falls but a slightly lower specificity than the 2.0 item. Facility-nurses were able to use a revised item that asks about fall-related injury to accurately code fall case studies.

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Phase 3: MDS 3.0 Integration and Alignment of Pilot Activities

In Phase 3, we translated the results from Phases 1 and 2 into community-based protocols, developing instructions for new MDS items, and pilot testing integrated protocols and MDS items in VA and community NHs. After VHA validation pilot testing was complete, the VHA national NH research consortium research team presented its pilot work to VHA leadership, CMS leadership, and an expert workgroup, the Workgroup on the Integrated Tool (WIT) (see Table 3.5).

Table 3.5 - Workgroup on the Integrated Tool (WIT) Participants

Name	Affiliation
Dawn Barrett, RNC, BSN, CRNAC	Hospital Corporation of America
Sarah Greene Burger, MPH, RN	National Citizen's Coalition for Nursing Home Reform
Diane Carter, RN, MSN, CS	American Association of Nurse Assessment Coordinators
Richard Della Penna, MD	Kaiser Permanente Aging Network
Sandra Fitzler, BSN	American Health Care Association
Christa Hojlo, DNSc	VHA Nursing Home Service
Paul Katz, MD	University of Rochester Medical Center
Barbara Manard, PhD	American Association of Homes & Services for the Aging
Katie Maslow, MSW	Alzheimer's Association
Christine Ann Mueller, PhD, RN	University of Minnesota School of Nursing
Judith Salerno, MD, MS	National Institute on Aging
Joel E. Streim, MD	University of Pennsylvania, Philadelphia VHA MIRECC
Eric Tangalos, MD	Mayo Clinic
Sheryl Zimmerman, PhD	University of North Carolina at Chapel Hill

On April 25, 2006, the WIT met in Arlington, VA to review the results from the pilot activities and to review proposed items for national testing. In addition to reviewing the VHA pilot results, the WIT reviewed a common structure for MDS instructions. The WIT also reviewed conclusions and recommendations from an ASPE/CMS sponsored evaluation of consolidated health informatics and health information technology.

Feedback from the WIT was incorporated into the next round of MDS 3.0 item and form revisions, which were then pilot tested in community and VA NHs. In addition, several items were added or modified based on discussions with a CMS RUGs recalibration study.

National Pilot Test

During June and July 2006, RAND and the VHA conducted training on a pilot version of MDS 3.0. Four VA facilities, five Colorado long-term care nursing facilities, and one hospital-based transitional care unit (TCU) participated in the pilot test.

Between June 16 and July 14, 2006, pilot testing was completed on 40 residents. At the end of data collection, pilot study staff provided written feedback and participated in a conference call to review the feedback with the evaluation team. The feedback addressed items in MDS 3.0, accompanying instructions, and feasibility of data collection protocols.

Revisions Prior to National Training

On completion of pilot testing and feedback, the research team made additional revisions and finalized MDS items, instructions, and validation protocols for testing in a national sample of community NHs during Phase 4 of MDS revisions.

We consulted the Kleimann Communications Group on form design to enhance the functionality of MDS data collection. The redesign focused on developing consistent cognitive maps and layout for items and responses in order to increase clarity and ease of use. Form redesign included larger fonts, logical page breaks, consistent patterns for response types, fewer items per page, and more instructions and definitions on the form.

In sum, to create the national data collection tools, the RAND/Harvard research team considered the following inputs:

- Feedback from the CMS –MDS Phase 1 project
- Advances in assessment science
- Priority, validity and feasibility scores from content experts
- Phase 2 VHA pilot test results
- Stakeholder and content expert feedback
- Recommendations from CMS standardized nomenclature contractor
- WIT feedback
- Planned resource utilization group (RUGs) Staff Time and Resource Intensity Verification (STRIVE) activities and need to maintain ability to construct RUGs
- The results of community pilot testing

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Phase 4: National Field Trial Methods & Facility Sample

The national validation and evaluation of the MDS 3.0 included 71 community NHs (3822 residents) and 19 VA NHs (764 residents), regionally distributed throughout the United States. The evaluation was designed to support testing and analyses of inter-rater agreement (reliability) between gold-standard (research) nurses and between facility and gold-standard nurses, validity of key sections, time needed to complete the MDS and anonymous survey feedback from participating nurses.

This section describes the approach we took in the national field test of the MDS 3.0 in the community sample.

Timeframe

National training for data collectors was completed August, 2006. Data collection began in that same month and was completed in February 2007. RAND received the final data collection forms from CFMC in May 2007.

Data analysis began in the summer of 2007. RAND/Harvard briefed CMS on the early results from the national trial in November, 2007 and a draft revised instrument was proposed to CMS on December 18, 2007.

Selection of Quality Improvement Organizations

We used the network of Quality Improvement Organizations (QIOs) to implement the national community data collection. The Colorado Foundation for Medical Care, our lead QIO, identified QIOs in 8 regionally distributed states to participate: California, Colorado, Georgia, Illinois, New Jersey, North Carolina, Pennsylvania, and Texas. The criteria established by the research team for QIO selection included:

- Geographical distribution throughout the United States to enhance the generalizability of results.
- State preferably required the full MDS 2.0 assessment or the RUG III-1997 for the quarterly review to maximize the number of items assessed in each case.
- Sufficient number of NHs in close proximity to the QIO or to the gold-standard nurses to allow concurrent data collection for agreement and validity within the resources and time available for data collection.
- The QIO expressed a strong interest in participating in the National MDS 3.0 Validation study. QIOs were to recruit the gold-standard nurses, support them in their activities, and help recruit study facilities. Since only a nominal honorarium was available, much of this activity would be *pro bono*.

Table 3.6 lists the selected states, associated QIOs, and parameters considered for participation in the project.

Table 3.6 - Characteristics of Selected Quality Improvement Organizations

Geographical Region	State	Quality Improvement Organization	Quarterly Review-type	Number of Nursing Facilities
East	New Jersey	Healthcare Quality Strategies	RUGS 1997	359
East	Pennsylvania	Quality Insights of Pennsylvania	RUGS 1997	717
South	Georgia	Georgia Medical Care Foundation	RUGS 1997	361
South	North Carolina	The Carolinas Center for Medical Excellence	MPAF	422
South-west	Texas	TMF Health Quality Institute	RUGS 1997	1131
Mid-west	Colorado	Colorado Foundation for Medical Care	RUGS 1997	218
Mid-west	Illinois	Illinois Foundation for Quality Health Care	Full MDS 2.0	802
West	California	Lumetra	2 page	1295

Facility Sample

The QIOs, in turn, identified gold-standard (research) nurses and recruited the community NHs that would participate in the national evaluation. The goal in selecting the community NH sample was to include both for-profit and not-for-profit facilities and hospital-based and free-standing facilities in proportions similar to those currently found in the United States.

We asked each QIO to recruit ten NHs to participate in the in-state training sessions. The goal was to have 70 NHs in the national sample. We translated this to approximately 9 NHs in each state contributing data for the National Validation Study. The tenth nursing facility attended the in-state training session and functioned as an alternate. The research team tracked recruitment to ensure that the final sample included a variety of for-profit, and not-for-profit NHs and included hospital based NHs. During the course of the study, NHs were added as needed to replace the facilities that could not continue with the study. California experienced difficulties with scheduling for one of the gold-standard nurses that required the state to enter data collection at a later date than other states. In order to complete data collection within the evaluation time frame for data collection, California's sample was limited to 6 facilities. Table 3.7 describes the number and types of NHs participating by state. Table 3.8 describes the structural characteristics of the facilities in the national sample. Table 3.9 shows the general categories of residents served by the sample facilities.

Table 3.7 - Number and Type of Nursing Facilities by State

State	Number of Participating Nursing Facilities	For-Profit Facilities	Not-for-Profit Facilities	Hospital Based Facilities
California	6	2	4	1
Colorado	9	7	2	0
Georgia	9	6	3	1
Illinois	10	8	2	1
New Jersey	10	6	4	0
North Carolina	9	4	5	1
Pennsylvania	9	6	3	0
Texas	9	7	2	1
Totals	71	46	25	(5)

Table 3.8 – Study Nursing Facilities Had Varied Characteristics (Survey of community facilities participating in MDS 3.0 Study)

	N = 71	Percent (%)
Facility Ownership		
National Corporation	17	24%
State/local Corporation	15	21%
Private	39	55%
Ownership Type		
For-profit	45	63%
Not-for-profit	25	35%
Government	1	1%
Facility Type		
Free Standing	64	90%
Hospital-based (acute care hospital)	6	9%
Hospital-based (long-term care hospital)	1	1%
Location		
Urban	55	78%
Rural	16	22%
Bed size		
Less than 50	3	4%
50 to 99	11	16%
100 to 149	25	35%
150 to 199	16	22%
200 or more	16	22%

Table 3.9 – Population Groups Served by 71 Sample Facilities

	N = 71	Percent (%)
Population served by this nursing home		
Hospice	66	93%
Sub-acute	56	79%
Mentally ill	26	37%
Rehabilitation	67	94%
Ventilator	2	3%
Special population (MS, HIV, etc.)	30	42%
MS	6	9%
HIV	1	1%
Cerebral Palsy	1	1%
Tracheostomy Care	1	1%
Presence of designated		
Alzheimer's unit	25	35%
Hospice unit	1	1%
Payer Mix		
0-10% Medicare	19	27%
11-25% Medicare	37	53%
26-50% Medicare	8	11%
51-75% Medicare	4	6%
Greater than 75% Medicare	2	3%

Selection and Recruitment of the Gold-Standard Nurses

Sixteen gold-standard nurses (2 per state) were recruited by the Quality Improvement Organizations to participate in the National Validation Study. The criteria for gold-standard nurse selection included extensive experience in the nursing home setting, American Association of Nurse Assessment Coordinators (AANAC) certification or the completion of 100 MDS assessments, extensive experience with the MDS 2.0, and licensure as a Registered Nurse.

Identification of the Facility-Nurse Data Collectors

The NHs that participated in the study were asked to identify the person who was primarily responsible for completing the MDS. This facility-nurse was designated to undergo training on MDS 3.0 and collect data at the facility level. Characteristics of these nurses are shown in Table 3.10.

Table 3.10 - Characteristics of Facility-Nurses in MDS 3.0 Study

	N =	Percent (%)
Gender (n=70)		
Male	6	9%
Female	64	91%
Facility Relationship (n=69)		
Full time with this facility only	65	94%
Part time with this facility only	1	1%
Covers other facilities in addition to this facility	3	5%
Percent of work time spent completing MDS 2.0 (n=69)		
90%-100%	30	43%
75-89% (most)	19	28%
50-75%	13	19%
Less than 50% of the time	7	10%
Time spent as MDS coordinator (at this or other facility) (n=69)		
Less than 1 year	6	9%
1-2 years	11	16%
2+-5 years	26	38%
5+10 years	19	27%
More than 10 years	7	10%
Degree (n=65)		
RN	44	64%
LVN/LPN	26	38%
Other	5	8%
Primary language spoken at home with family (n=69)		
English	65	94%
Spanish	1	1%
Other	3	5%
Received formal (course work) training on completing MDS 2.0 (n=69)		
Yes	50	72%
Completed the AANAC Credentialing Program (n=69)		
Yes	25	36%

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National MDS 3.0 Training for Gold-Standard Nurses

The sixteen gold-standard nurses, the project manager for our lead QIO, instruction consultants, content experts, and Harvard co-investigators attended two four-day sessions at the RAND Corporation in California in late July and early August 2006. The VHA paid for VA gold-standard nurses to attend the sessions.

The first session introduced MDS 3.0 items, provided training on the items, and obtained feedback from participants on items, item layout, and clarity of instructions. As part of the training activity, the gold-standard nurses visited California NHs that had agreed to serve as training sites and collected the MDS 3.0 items on a small number of residents (2-3 residents for each interviewer pair). Items and instructions were revised based on feedback from the gold-standard nurses and a qualitative review of agreement from initial interviews.

The second session reviewed revisions to items and instructions and trained staff on the validation data collection tools and the protocols associated with them. Clinical practice sessions for the gold-standard measures were included. Mental health content experts did one-on-one training and observed the gold-standard nurses collecting the gold-standard mood and psychosis/behavior items.

National MDS 3.0 Training for Facility-Nurses

Train the Trainer

The second session also included training for the gold-standard nurses on the conduct of upcoming in-state trainings and data collection protocols. RAND provided the nurses with all materials needed to conduct upcoming in-state trainings. Materials included power-point presentations, video tapes of parts of national training, a video demonstrating different balance patterns and two role playing videos for resident interviews.

The gold-standard nurses then returned to their own states, where they trained a facility-nurse from each participating NH on the new MDS form.[i] Training took place over 3 days at a central location in each state. With the exception of California, training took place in August 2006.

The training included instruction on scoring all items (both revised and unchanged) in the MDS 3.0 as well as an explanation of all protocols associated with the data collection for the MDS 2.0 and 3.0.

All facility and gold-standard nurses were required to sign a confidentiality agreement. The gold-standard nurses and the facility-nurses or their respective NH received an honorarium for participation in the training.

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[i] We trained one nurse per facility. Nurses could, in turn, elect to train members of their interdisciplinary team (IDT) to complete sections if they desired. We requested that if other team members completed a section, that they do so for at least 20 cases. It appears that some facilities took this approach since many MDS 3.0 forms included multiple entries for times and had titles of different members of the IDT written beside times on the tracking sheet.

Chapter 3: Methods to Develop and Test MDS 3.0

Study Design

The study data collection protocols had four purposes

- **Evaluate MDS 3.0 Reliability:** Inter-rater reliability measures the extent to which two data collectors achieve the same results when assessing the same resident within the same time frame. We measured two types of reliability, gold-standard nurse to gold-standard nurse, and gold-standard nurse to facility-nurse. The gold-standard to gold-standard comparisons provided information on instrument performance with highly trained nurses using research protocols. The gold-standard to facility-nurse comparisons measured performance in a more operational environment in which one assessor had ongoing facility responsibilities.

- **Evaluate MDS 3.0 Validity:** Validity assesses the degree to which a set of items measures the intended concept. We did this by comparing several new items and old items either to established gold-standard assessment items (which are usually longer and more complex) or to similar related items and scales.

- **Evaluate Potential Effect of MDS 3.0 on Daily Facility Operations:** We intended to obtain structured anonymous feedback from study participants regarding clinical relevance, usefulness, and clarity of revised items. To better understand the potential effect of the form on daily operations, we also aimed to obtain measures of time needed to complete the MDS 2.0 form and MDS 3.0 on the same sample of residents.

- **Maintain MDS 2.0 Payment and Quality Assurance Functions:** We wanted to compare the new MDS 3.0 items with the old MDS 2.0 items in order to facilitate the development of adjustment strategies that allow mapping into payment cells while maintaining payment neutrality in the aggregate. We also intended to map items to quality measures, which would require temporally coordinated collection of MDS 2.0 and MDS 3.0 payment and quality items.

National Data Collection

Data collection by the gold-standard nurses and the nursing facility-nurses began in September 2006 and continued through February 2007.
All completed MDS 2.0s were collected as part of standard facility protocols and schedules. MDS 3.0 and validation items were timed to coordinate with this schedule. Data were collected on a total of 3,822 nursing home residents.

Resident Sampling

In selecting residents for the national test, the evaluation team aimed to capture a representative sample of short- and long-stay residents. In order to maximize the number of 2.0 items assessed, our algorithms included a strong preference for capturing cases scheduled for MDS 2.0 admission assessments. If admission cases were unavailable, data collectors were asked to prioritize capturing scheduled MDS 2.0 annual assessments. The goal was for at least ½ of sample to be full (admit or annual) assessments.

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Data collectors were instructed to identify cases based on when they were scheduled for MDS 2.0 assessments. They were instructed to identify residents for inclusion based on form type as described in the prior paragraph, rather than on resident characteristics.[ii]

Part of our training focused on the random assignment of residents who were scheduled for MDS 2.0 assessment into the various protocols. Color coded ID labels, tracking sheets, and forms were used to assist participating staff in keeping protocol assignments clear. A summary of the protocol types is provided in Table 3.11.

Table 3.11 – Protocols Were Designed to Meet Evaluation Purposes

Review Type	Purpose	Review Documents Included in Each Review Type	Data Collector
Reliability Assessments: Gold-Standard Nurse (GSN) to GSN	Check that the 3.0 items are being filled out reliably by GSNs and compares the GSN 3.0 items to the NH 2.0 items.	MDS 3.0	GSN 1
		MDS 3.0	GSN 2
		MDS 2.0	NH norm
Reliability Assessments: GSN to Facility-Nurse (FN)	Compare a gold-standard data collector to a "regular" staff member on the 3.0 items and compares the FN 3.0 items to the NH 2.0 items.	MDS 3.0	GSN 1 or 2 *
		MDS 3.0	FN
		MDS 2.0	NH norm
Facility only Assessments	Compare the FN 3.0 items to the NH 2.0 items	MDS 3.0	FN
		MDS 2.0	NH norm
Validation Assessments	Compare the new MDS 3.0 items to a gold-standard instrument.	subset of MDS 3.0	GSN 1
		validation items	GSN 2
		MDS 2.0	NH norm
Validation Protocol Reliability Assessments	Check that gold-standard items were filled out reliably.	validation items	GSN 1
		validation items	GSN 2

* Protocol assigned GSN to facility-nurse reviews so that they were divided between the two gold-standard nurses in each facility.

An additional design challenge was ensuring that the MDS 2.0 and 3.0 items for a given resident were collected within a short enough timeframe to allow a fair comparison. This consideration was particularly important for sicker residents, who might undergo significant clinical change over a few days. The research team required data for MDS 3.0 interview items to be collected within 24 hours of the collection for MDS 2.0 items. Nurses were instructed not to view the MDS 2.0 form while collecting the MDS 3.0 and vice versa.

[ii] The one exception was the instruction to exclude comatose residents since the associated MDS assessment would be more truncated.

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Data collectors were instructed to collect the Validation items (blue and gold forms) within 24 hours of each other. Gold-standard nurses transmitted their data collection forms weekly; facility-nurses transmitted monthly. Forms were transmitted to the lead QIO for final de-identification before being sent for data entry.

We also had to complete the reviews without burdening the resident with multiple proximate interviews. We addressed this concern by dividing the sample so that residents were assigned among different data collection protocols, and therefore individual staff were not collecting all forms on every resident. When facility MDS 2.0 assessments were due, nurse data collectors were instructed to assign that case to one of the review types in the order they became available. In addition, since ideal inter-rater reliability involves coding the same information, the interviewers observed the same interview but each coded independently without discussing observed content or responses. Interviews were alternated between members of each pair. Medical record review was also independently coded.

Time to Complete

Facility-nurses were trained to record the date that the form was completed and the time required to complete each MDS 3.0 case and MDS 2.0 case for their NH. They were instructed to code exact start and stop times for all data collection activities. A tracking sheet was provided for each form to accommodate possible interruptions and multiple data collectors in collection activities. The individual start and stop times were data entered and those data were totaled by the analytic team.

Feedback Assessment

The research team maintained a database of questions and responses throughout the data collection period. The lead Quality Improvement Organization initiated regular contacts and elicited feedback and questions throughout the national evaluation. Input was also formally obtained from participating nurses through structured surveys. One survey of facility staff obtained information on normal MDS 2.0 collection processes and baseline attitudes about MDS 2.0. At the conclusion of the national testing, the research team also surveyed facility staff and gold-standard nurses who participated in the national validation activity to obtain their feedback on MDS 3.0 changes. Data collectors were assured that their feedback to both surveys was anonymous. This feedback was important in making final revisions to the MDS 3.0 and the instructions.

Analyses

To analyze the national study data, we created analytic samples to match our study purposes above. To assess reliability statistically, we created one analytic data set with gold-standard to gold-standard nurse assessments and another with gold-standard to facility-nurse assessments on the same resident. We then computed a number of measures, including kappa statistics to correct for chance agreement; Pearson correlation coefficients; and intraclass correlations for measures made on a continuous scale. For binary and categorical items, we used unweighted kappas; for ordinal and scaled items, we used weighted kappas. We used accepted standards for kappas: values below .4 are

considered poor agreement, 0.4 to 0.6 as moderate, 0.61 to 0.8 as very good, and those above .8 as excellent.

To allow comparisons of item distributions between MDS 2.0 and MDS 3.0, we created a MDS 3.0 Crosswalk file that included all cases where we had a MDS 3.0 form and MDS 2.0 form on a resident. This file included the facility only assessments, the facility-nurse MDS 3.0 assessment from the facility-nurse to gold-standard reliability cases, and one gold-standard MDS 3.0 assessment from the gold-standard to gold-standard cases (the cases were randomly selected from each nurse pair to achieve approximately equal numbers of cases from each gold-standard nurse in each pair). Cases were matched to MDS 2.0 forms for that resident. In addition to allowing comparison of item and response distributions between the two instruments, a primary purpose for this crosswalk file was to conduct analyses to identify adjustment strategies that allow mapping into payment cells while maintaining payment neutrality in the aggregate.

To compare gold-standard validation item reliability, we created an analytic file with gold-standard to gold-standard collection of criterion measures on a sample of residents. We created another analytic data set with validation criterion items and related MDS 3.0 and MDS 2.0 items. We used this data set, along with the larger crosswalk data set to examine various measures of item validity. Since some of the analyses relate to validity, we provide here a brief overview of measures of instrument performance important for validity.

Overview of Measures of Instrument Performance

Instrument performance is most commonly assessed by measuring item and scale reliability and validity.

- Reliability, or reproducibility, of the measure is a necessary condition for performance. An instrument is considered reliable if repeated assessments either by another assessor or later in time yield the same or very similar responses. It tests the underlying stability of the concept, the clarity of the item and the coherence of the instructions. Many consider reliability a cornerstone for achieving validity when an item is used.

- Validity, or accuracy, is the extent to which the instrument measures what it purports to measure. Validity can be assessed by one or more of several methods.
    - *Content validity* assesses whether the measure captures the essential elements of the concept being measured.
    - *Criterion validity* describes the degree to which a tested measure agrees with an accepted true value. It can be of two general types, *concurrent* and *predictive*, essentially distinguished by the temporal relationship between the measure and the criterion or gold-standard measure.
    - *Construct validity* considers the extent to which the expected relationship between the tested measure and other concepts is consistent with what is actually observed. Two main approaches exist: *convergent assessment* (relates to a similar measure), and *discriminate validity* (distinguishes between two groups known to differ on the underlying concept being measured).

Phase 5: Final Revisions to MDS 3.0

Consolidation and Summary of Feedback from National Validation

In Phase 5 of the MDS 3.0 evaluation project, the research team reviewed analytic results and feedback and developed recommendations for CMS. We worked with CMS to finalize item recommendations for MDS 3.0; in those instances where the proposed MDS 3.0 item performance was no better (or worse) than the MDS 2.0 item, we recommended retaining the MDS 2.0 item, with which facilities have pre-existing experience and training. In addition, we worked with other CMS contractors to revise the administrative data elements in Section A draft record types for the MDS. Preliminary drafts of section A for different record types are included in Appendix C.

Revising the Instruction Manual

The instruction manual was also revised to reflect the new MDS 3.0 items and lessons learned from the field trial. To facilitate use, the instruction manual was created to have a common structure across sections. During the data entry period for Phase 4, the evaluation team assembled an instruction workgroup to review the instruction manual that was used in the field trial. The workgroup included representatives from the RAI Coordinator group, the American Association of Nurse Assessment Coordinators, the American Health Care Association, the American Association of Homes & Services for the Aging, and the VHA. As final items were selected in Phase 5, the evaluation team revised those sections of the instruction manual, incorporating feedback from the workgroup and from the national trial.

Technical Expert Panel

On January 23, 2008, a Technical Expert Panel was convened in the RAND Arlington office to review the results of the national field trial and data analysis. Drawing on participants from the previous TEP, Validation Panel, and Workgroup on the Integrated Tool, we identified a panel with a wide range of perspectives and with experience in NH care delivery, management, and quality improvement across MDS items (Table 3.12).

The TEP reviewed the primary results of the field trial and offered very positive feedback on the changes recommended by RAND. The panelists were asked to make recommendations on some items with indeterminate results (that is, the results from the national testing did not clearly indicate whether the item should be kept, replaced with MDS 2.0 item, or dropped). They discussed future directions for dissemination of MDS 3.0, training nursing home staff on the new tool, potential structure, and approaches for revising the Resident Assessment Protocols and the possible revision of the discharge assessment record.

Table 3.12 - Technical Expert Panel Membership

Name	Affiliation
Sarah Greene Burger, MPH, RN, FAAN	National Citizen's Coalition for Nursing Home Reform
Diane Carter, RN, MSN, CS	LTC NurseNet
Victoria Christian, MBA, RNC, CNHA	American Hospital Association
Sandra Fitzler, BSN	American Health Care Association
Irene Fleshner, RN, MHSA	Nurse Executive Council
Bob Godbout, PhD	Stepwise, Inc.
Deanna Gray-Miceli, DNSc, APRN, FAANP	University of Pennsylvania
Christa Hojlo, DNSc	VHA Nursing Home Service
Paul Katz, MD	University of Rochester School of Medicine and Dentistry
Mary Jane Koren, MD, MPH	The Commonwealth Fund
Rosemary Lubinski, EdD	University at Buffalo
Barbara Manard, PhD	American Assoc of Homes & Services for the Aging
Katie Maslow, MSW	Alzheimer's Association
Mark Snowden, MD, MPH	University of Washington at Harborview Medical Center
Eric Tangalos, MD	Mayo Clinic
Sheryl Zimmerman, PhD	University of North Carolina at Chapel Hill

Open Door Forum to Disseminate MDS 3.0 Recommendations

CMS hosted an Open Door Forum (ODF) on January 24, 2008. Participants included 2994 telephone links, 15 videoconference links, and approximately 50 in-person guests. The total number of participants was estimated at 5000 individuals. During the ODF, we provided stakeholders with information about the national study results and revisions. A revised MDS instrument was made publicly available prior to the meeting. Following our presentation, we accepted questions from participants.

Overview of Results

The national trial for MDS 3.0 had strong results.

- **Resident voice:** Resident interview appeared to be successfully included with the majority of residents being able to complete interview sections, staff members reporting that items provided new and useful clinical insights, and analyses showing significantly improved validity for cognitive and mood items.

- **Clinical Relevance:** Nurses who used the form reported that the revisions were more clinically relevant than MDS 2.0. Items used in other clinical settings showed either excellent or very good reliability with low rates of missing responses.

- **Accuracy:** MDS 3.0 items showed either excellent or very good reliability even when comparing research nurse to facility-nurse assessments. For items where independent gold-standard measures were obtained for validation, MDS 3.0 showed improved validity.

- **Efficiency:** MDS 3.0 was able to improve assessments and decrease time to complete. The average time to complete MDS 3.0 was 45% less than the average time to complete MDS 2.0 on the same sample.

In the sections that follow, we will provide more details on results. In this chapter we will describe overall results for time and the general section of the survey. In Chapters 5-10, we will provide the community NH results for specific sections, emphasizing sections that underwent significant revisions as a result of VHA validation work. For other sections with major changes, we will present rationale for changes and reliabilities in Chapter 11. The use of MDS 3.0 in Resource Utilization Groups and in Quality Measures is discussed in Chapters 12 and 13 respectively.

Time to Complete

We hypothesized that the new instrument would take longer, on average, because staff would be unfamiliar with the form, tracking systems and charting would not be set to it and all MDS 3.0 assessments were full assessments (without section T). However, analysis of the actual times revealed that collection times were actually considerably less for MDS 3.0 than for MDS 2.0 (see Table 4.1).

Table 4.1 – MDS 3.0 Took Less Time to Complete (Times in Minutes)

	Average	Median
MDS 3.0	61.5	60.0
MDS 2.0	111.6	95.0

Chapter 4: Results Of National Trial

In addition, to better understand times for standardized interviews, we asked the gold-standard nurses to record start and stop times for specific interviews in the validation sample. These times are shown below (see Table 4.2).

Table 4.2 - Resident Interview Times (All who attempted)
(Item-specific times collected during validation process - Times in Minutes)

	Average	Median Time
BIMS	3.2	3.0
PHQ-9	4.0	3.0
Pain Items	2.0	2.0
3 Interview Sections Combined	9.2	

Reliabilities Overall

Item level kappa scores for retained MDS 3.0 items were very good to excellent for both the gold-standard to gold-standard and the gold-standard to facility-nurse comparisons. Overall reliabilities were often higher than those published for related MDS 2.0 items, particularly when comparing facility to gold-standard nurse. Specific MDS 3.0 agreement and kappas are discussed in the results chapters and included in a summary table in Appendix A. A table with prior reported MDS 2.0 reliabilities is in Appendix F.

Validation Overall

National validation testing for MDS 3.0 cognitive, depression and behavior items showed significantly higher agreement with criterion measures than did MDS 2.0 items collected on the same residents. Specific validation testing and results are included in the chapters that follow.

Chapter 4: Results Of National Trial

Nurse Feedback Overall

The following table (Table 4.3) shows nurses' anonymous written feedback on the overall MDS 3.0 revision at the end of the field trial. Where relevant, nurses' responses to a separate MDS 2.0 survey are noted.

Table 4.3 - Nurse Overall Feedback on MDS 3.0 Was Positive

	Strongly Agree & Agree (1-2)	Neutral (3)	Disagree & Strongly Disagree (4-5)
Clinical Relevance			
In general, compared to MDS 2.0,			
MDS 3.0 is more clinically relevant.	81%	13%	5%
From 2.0 Survey: MDS 2.0 helps the NH staff know what is important for assessment.	58%	29%	13%
MDS 3.0 will help staff identify problems that might not have been noticed without the MDS.	85%	9%	5%
From 2.0 Survey: MDS 2.0 helps me detect clinical problems that might not have been noticed without the MDS.	66%	25%	9%
MDS 3.0 items are more likely to help the NH staff detect changes in the resident's status.	79%	13%	8%
From 2.0 Survey: MDS 2.0 items help the NH staff detect changes in the resident that they would otherwise miss.	55%	26%	19%
The structured interview sections (cognition, mood, customary routine, activities, pain) on the MDS 3.0 improved my knowledge of the resident and his/her health conditions.	84%	9%	7%

	Strongly Agree & Agree (1-2)	Neutral (3)	Disagree & Strongly Disagree (4-5)
Validity			
In general, compared to MDS 2.0,			
MDS 3.0 items allow a more accurate report of the resident's characteristics.	89%	7%	4%
From 2.0 Survey: MDS 2.0 items fairly reflect the clinical complexity of most residents.	45%	28%	28%
From 2.0 Survey: Quality Measures based on MDS 2.0 items reflect the quality of care provided to the resident.	28%	35%	38%
MDS 3.0 items better reflect best clinical practice or standards.	76%	20%	4%
From 2.0 Survey: MDS 2.0 items reflect best clinical practice or standards.	39%	39%	22%
Clarity			
In general, compared to MDS 2.0,			
MDS 3.0 questions are more clearly worded.	85%	12%	3%
From 2.0 Survey: MDS 2.0 questions are clearly worded.	59%	22%	19%
MDS 3.0 clarified several difficult items.	76%	17%	7%
From 2.0 Survey: MDS 2.0 response choices are clear; choices for specific items are easy to distinguish.	32%	38%	30%

Feedback on specific items is included in the chapters showing results for those items.

Rationale, Item Development, Results of National Test

The MDS 2.0 cognitive pattern section has three major components: comatose, memory/decision making, and indicators of delirium. The comatose item was voted valid and feasible by the validation panel and no change was considered by the evaluation team. The other components were considered for significant revision. Below we outline the rationale for considering change, review the testing to develop revised items, and present the results of national testing.

➢ Memory/Orientation

Reasons for Testing Change to Memory/Orientation Items

The MDS 2.0 cognitive assessment items are based on staff member(s) subjective observations of the resident. These items can be used to calculate the Cognitive Performance Scale (CPS) for research or case-mix purposes.[9] Although CPS scores based on research-nurse cognitive assessments are overall strongly correlated with Mini-mental State Exams (MMSE) scores,[9,37] previous studies have demonstrated moderate correlation between CPS scores derived from routine facility MDS assessments and the MMSE,[8,38] indicating less than optimal validity of the cognitive items as routinely collected. Actual facility nurses express discomfort with trying to accurately complete these subjective assessments. Only 29% of the nurses in our survey reported that MDS 2.0 cognitive items are easy to complete accurately.

While MDS 2.0 misclassification may seem insignificant on a population basis, incorrect cognitive screening can have serious implications for care planning at the patient level.[39] Because cognitive status is a main domain influencing quality of life, resident interviews are viewed as a more appropriate assessment method.[21] Because subjective screening is more likely to err in identifying cognitive impairment than objective testing[40-43] and is more likely to be influenced by unrelated patient characteristics and staff attitudes,[21,44] objective performance-based testing is the preferred approach,[45,46] reserving subjective assessments for instances when residents cannot communicate.

In addition, the cognitive items in MDS 2.0 are unique to the nursing home setting and do not align with items used or recognized by providers in other settings. Written feedback on MDS 3.0 included strong objections to the subjective nature of MDS 2.0 cognitive items. The MDS 3.0 validation panel rated the individual MDS 2.0 memory items, when scored by nursing home staff, as having indeterminate validity. They also rated a procedural memory item from the MDS-post acute care instrument (MDS-PAC) as not valid when collected by direct care staff. In a different ongoing CMS study to identify common assessment items across settings, providers from other settings testing the "memory OK" items objected to the subjective and ill-defined nature of these items, leading to their removal. A related limitation of the cognitive assessment in the MDS 2.0 is that derivation of the CPS score requires application of an algorithm; thus although scores may exhibit overall validity, they are not typically available to facility nurses. This

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effectively limits the assessment's impact on staff-patient interactions and on communication across providers.

Objective performance-based cognitive screening offers benefits beyond classifying residents. Another primary rationale for objective performance-based cognitive testing is the key role these objective assessments play in identifying delirium. Delirium, an extremely important medical condition, is often missed in nursing homes as well as in hospital settings. Valid delirium screening protocols rely on staff conducting a structured, objective cognitive screen to better observe delirium-related behaviors.[47,48]

Item Development: Summary

Our VHA pilot work showed that a simple performance-based cognitive screen, the Brief Interview for Mental Status (BIMS), can be used by nursing home staff. The performance-based screen included temporal orientation and recall items, common to recognized cognitive screening tools.[49,50] The response scales were modified to allow differential scoring for answers to temporal orientation that are "close" to correct answers and partial credit when a resident could recall an item after being prompted.

These modifications provide opportunities for more accurate assessment and more tailored care plans in the nursing home environment. In VHA testing, this approach more accurately detected cognitive impairment than did the existing MDS 2.0 staff synthesis of observations. In VHA pilot activities the BIMS, whether collected by research study staff or by NH staff, was more highly correlated with a gold-standard measure of cognitive function than was the MDS 2.0 CPS score. In addition, staff reported increased confidence in the accuracy of their cognitive assessments when using the structured assessment instead of the current MDS 2.0 syntheses of observations. The finding that staff could use structured cognitive assessments opened the door to inclusion in the MDS 3.0 of items with greater recognition and credence in other settings, improving communication with providers.

Methods for National Testing of the Brief Interview for Mental Status (BIMS)

We included the Brief Interview for Mental Status in the national MDS 3.0 test. We also included "organized thinking" items at the recommendation of content experts for delirium assessment. For our gold-standard measure of cognitive function, we used the Modified Mini-Mental Status (3MS) exam, an expanded version of the Mini Mental State exam (MMSE) that has greater reliability and validity than the briefer MMSE.[51-54] In addition to the items used in the MMSE, the 3MS includes 4 items that more broadly test cognitive function. The 3MS uses an expanded total score of 100, increased from 30 for the MMSE, increasing the test's discriminatory capability at different levels of cognitive function.

For crosswalk comparisons, facility nurses were asked to complete MDS 2.0 cognitive items per standard protocol before conducting cognitive status interviews. This order was determined because we reasoned that the BIMS interview might influence MDS 2.0 assessments. Since staff were to record only the resident's direct response to BIMS items, we reasoned that the resident's responses would not be influenced by staff assessments in

the medical record. For validation cases, the BIMS and 3MS were collected within 24 hours of each other. To minimize order effects, the order of collection was reversed for approximately half of the sample in each facility. The data collection was timed to start within 24 hours of the assessment reference date for the resident's MDS 2.0 cognitive assessment. For validation testing, interviewers were unaware of facility MDS 2.0 scores.

We instructed staff members to approach for BIMS testing all the residents who were scheduled for MDS 2.0 assessments during the validation data collection window and who were capable of any communication. For residents interviewed with BIMS, their MDS 2.0 as collected by routine facility protocol was also obtained. For residents who could not communicate, the MDS 3.0 form included the MDS 2.0 staff items and MDS 3.0 data collectors were instructed to complete these staff items per standard approaches.

Methods for obtaining gold-standard nurse to gold-standard nurse and gold-standard nurse to facility-nurse agreement are those described for the entire sample in the methods chapter. Nurses who participated in the MDS national study anonymously completed a feedback survey at the end of the national study. The structured questionnaire used Likert scale responses to obtain feedback on BIMS and also provided space for written comments.

Results of MDS 3.0 National Testing

Staff Feedback on BIMS Was Positive

National Community feedback from BIMS users echoed what we heard in the VHA trial.

- 78% of nurses preferred the structured MDS 3.0 interview to MDS 2.0 subjective assessment
- 88% reported that interview provided new insights into resident's cognitive abilities
- Also consistent with VHA testing, the disorganized thinking items that were not part of the BIMS were less highly rated[iii]

Agreement Between MDS 3.0 Assessors for BIMS Was Excellent

Reliabilities, measured by kappas, were excellent. The average gold-standard to gold-standard kappa was .977. The average gold-standard to facility-nurse kappa was .973.

[iii] Because of poor performance in pilot and national trials, we have not recommended including disorganized thinking items in MDS 3.0. Staff members and residents in both samples objected to the items (61% of staff respondents from the MDS 3.0 survey noted that many residents thought that the organized thinking items were silly or insulting.) In pilot studies these items did not improve validity of BIMS scores. In our national sample, these items did not contribute to predicting delirium presence chi-square = .051 (p .82)

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Performance of BIMS in Crosswalk Sample

Ability of nursing home residents to complete the BIMS was high

The interview was attempted in 94% of the 3,258 residents in the combined crosswalk sample. 3.5% of those who attempted interview did not complete the interview. Thus, of the overall sample of 3,258, 90% completed the BIMS.

Validation Sample

Table 5.1 shows the age distribution for the MDS 3.0 sample for validation of the BIMS. Ninety-three percent of the validation sample completed the BIMS.

Table 5.1 – Age Distribution for MDS 3.0 Validation Sample

Age	Percent (%) (n=418)
< 65	15
65-84	43
85+	42

Residents completing the BIMS represented a full range of cognitive abilities

BIMS is scored based on the sum of item values; in the validation sample, scores ranged from 0-15. Ninety-six percent of the validation sample completed the 3MS and scores covered a wide range. The mean 3MS Score was 63.1 (range: 0-100).

Tables 5.2 - 5.4 show the percent distribution of cognitive groupings based on the MDS 3.0 BIMS, CPS, and gold-standard 3MS respectively.

Table 5.2 - BIMS distribution, all Validation respondents

BIMS Categories	Percent
Intact/borderline (13-15)	48
Moderate impairment (8-12)	26
Severe impairment (< 8)	27

Table 5.3 - MDS 2.0 Cognitive Performance Scale (CPS) distribution

CPS Groups	Percent
Intact/borderline (0-1)	36
Moderate impairment (2-4)	52
Severe impairment (5-6)	12

Table 5.4 - Gold-standard Measure (3 MS)

3MS Groups	Percent
Intact/mild (78-100)	43
Moderate impairment (77-48)	30
Severe impairment (<48)	26

Which assessment has better performance relative to the Gold-standard Measure?

We considered two analyses to test whether MDS 3.0 BIMS or MDS 2.0 CPS better matches the 3MS gold-standard

1. **Correlation with Gold-Standard Measure (3MS) was higher for BIMS (p < .01 for difference)**

   MDS 3.0 BIMS correlation with 3MS = 0.906 (< .0001)
   MDS 2.0 CPS correlation with 3MS = -0.739 (< .0001)

2. **Sensitivity and specificity and Area Under the Receiver Operating Characteristic Curve (AUC)**

We considered sensitivity and specificity of different BIMS and CPS cut points for predicting any cognitive impairment (defined as 3MS<78) and moderate to severe cognitive impairment (defined as 3MS<48). The Area Under the Receiver Operating Characteristic Curve (AUC) is derived based on sensitivity and specificity rates and provides a single number to reflect the accuracy of a test (in this case the MDS 3.0 BIMS and the MDS 2.0 CPS) relative to a gold-standard (in this case the 3MS). An AUC value of 1 represents a perfect test and a value of 0.5 represents performance at chance levels. The larger the AUC, the more accurate the test is considered to be.

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Tables 5.5 and 5.6 report AUCs for both the BIMS and CPS, reflecting their ability to identify two different categories of cognitive impairment in the gold-standard measure: any cognitive impairment and severe cognitive impairment. We also note an optimal cut-point and associated sensitivities, specificities for classification. Since slightly different samples had complete BIMS, MDS 2.0 CPS, and 3MS, we limited our sample to the 375 who completed all three measures. Examination of the results in these tables indicates better performance of the BIMS.

Table 5.5 - BIMS had Greater Area Under the Receiver Operating Characteristics Curve for Identifying <u>Any</u> Cognitive Impairment

	AUC	Optimal Cut Point	Sensitivity	Specificity
BIMS	.930	≤ 12	.83	.91
CPS	.824	≥ 2	.84	.67

Table 5.6 - BIMS had Greater Area Under the Receiver Operating Characteristics Curve for Identifying <u>Severe</u> Cognitive Impairment

	AUC	Optimal Cut Point	Sensitivity	Specificity
BIMS	.960	≤ 7	.83	.92
CPS	.857	≥ 3	.82	.75

Other Items Tested

In validation testing, one gold-standard nurse collected an item that used staff observation and chart review to code "Procedural memory OK – Can perform all or almost all steps in multitask sequence without cues." Response choices were:

0. Memory OK

1. Memory problem

Later, the gold-standard nurse conducted the 3-MS exam that includes a 3-step command performance test. Correlation between the items was only modest (-.32, p < .001).

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➢ Delirium

Reasons for Testing Change to Delirium Items

Delirium is an exceptionally common problem among frail elders in NHs. One study of post-acute care admissions found delirium indicators in 23%.[55] A subsequent study that used the Confusion Assessment Method to evaluate 2158 post-acute care admissions found that 16% met diagnostic criteria for delirium, 13 % had 2 or more symptoms, and an additional 40% had one delirium symptom but did not meet full criteria for delirium.[56] These prevalence rates are supported by other studies documenting significant rates of delirium in hospitalized older adults, the source for most post-acute care admissions. Inouye et al. found that 15% of hospitalized persons age greater than 70 met criteria for delirium.[57] Older adults discharged with delirium have a high probability of nursing home admission.[58]

These high rates are important for nursing home care quality. Sensitive and specific screening for this syndrome averts inappropriate attribution of symptoms to irreversible cognitive impairment or psychosis and should be the first step in a targeted evaluation for potentially treatable or modifiable causes of the syndrome.[59] Unfortunately, reliability estimates of the MDS 2.0 delirium items have been poor.[14] In addition, the items have had identification rates much lower than independent national studies would suggest. Despite this poor performance, the clinical importance of the condition necessitated including these items in the MDS. Given the poor reliability, researchers are reluctant to use the MDS delirium indicator.[60]

The presenting signs and symptoms of delirium are often subtle and detection is difficult. Unstructured staff recognition of delirium has tended to have extremely low sensitivity but acceptable specificity, meaning that cases are frequently missed, but when they are detected they tend to be actual delirium. The Confusion Assessment Method (CAM), a standardized instrument that has been developed to facilitate the detection of delirium,[61,62] operationalizes assessment of DSMIII-R criteria for delirium, and has been validated in older hospitalized adults. Peer-reviewed evaluations of the CAM in hospital and post-acute care settings have shown that the CAM has overall 94% sensitivity and 89% specificity.[63] The CAM is a recognized tool endorsed for use by many organizations and has been included as a recommended approach to screen for delirium in over 30 guidelines.[45,63,64]

Item Development Summary

Our VHA pilot work showed that the Confusion Assessment Method, validated in older hospitalized adults, is feasible for use in the NH setting. Initially, the ability of NH staff to detect delirium using the CAM without structured cognitive testing was poor compared to research nurse detection. We therefore made significant revisions to the form, instructions, and training. This initial low detection is consistent with research showing that assessments by clinicians, even when guided by the CAM, can differ from assessments performed by researchers.[47]

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The VHA team retested a revised form and protocol that included the BIMS and instructions linking observations made during the BIMS structured assessments to delirium items. Retesting showed improved correlation between research nurse and clinical nurse using the revised protocol. Clinical staff were able to complete the CAM on all residents assessed. We tested two sets of "organized thinking" items and found that the items included in CAM-ICU[65] had fewer reported problems. Neither set was favored by staff and residents.

The finding that NHs could use the CAM would allow the MDS 3.0 to include a standardized assessment used in other settings. Based on this evidence and the feasibility work in our VHA pilot, we included the CAM in the national test of MDS 3.0. This allowed the testing of an assessment increasingly endorsed by national organizations for assessing delirium. Based on content expert recommendation, we also moved disorganized thinking items forward for national testing.

Analyses: Definition of Delirium Variables

Delirium definition, using MDS 3.0 CAM items, requires one of the following:
- o Inattention + either disorganized thinking or altered consciousness or psychomotor retardation
  AND
- o Either acute onset or one of the symptoms fluctuates

Subdelirium definition using MDS 3.0 CAM items requires not meeting definition for delirium and having:
- o Inattention, disorganized thinking, altered level of consciousness or psychomotor retardation = 1
  AND acute onset
  OR
- o Inattention, disorganized thinking, altered level of consciousness or psychomotor retardation = 2

Delirium definition using MDS 2.0 requires that any of 6 behaviors in MDS 2.0 section B5 be coded as new onset or worsening

Results of MDS 3.0 National Testing on Delirium Items

Staff Feedback was positive
- 85% of respondents to the anonymous users' survey reported that the definitions and descriptions of delirium on the MDS 3.0 form were clear
- 71% felt that the items would improve their screening for delirium
- Although each facility nurse only assessed 40 residents, 64% reported that they observed delirium-related behaviors during the structured cognitive interview (BIMS) that differed from the behaviors documented in the medical record.

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Agreement Between MDS 3.0 Assessors Was Excellent

Reliabilities, measured by kappas, were excellent. Overall average kappa for gold-standard vs. gold-standard nurse assessment was 0.893 and 0.85 for gold-standard vs. facility-nurse. Appendix A shows item level kappas. These reliabilities are higher than those that have been reported for MDS 2.0.

Performance in Crosswalk Sample

The content and criterion validity of the CAM has already been established in studies conducted in hospital and post-acute care populations. To examine construct validity in the current sample, we asked:

1. **Which approach yields prevalence rates closer to expected rates of delirium?**
Applying the CAM in MDS 3.0, study nurses found 7% of 3,258 residents met criteria for delirium; an additional 7% met criteria for subdelirium. In the same sample, MDS 2.0 showed 2.5% as having delirium or subdelirium. Thus, prevalence using the CAM in MDS 3.0 was closer to independently established prevalence rates as described in rationale above.

2. **Is the observed relationship between the CAM and BIMS consistent with what would be expected? (construct validity)**
Delirium is more common in persons with dementia. In one study that screened community dwelling adults for delirium, 13 % of those with dementia had symptoms of delirium, compared to 1% of the population without dementia.[66] In the current sample, the CAM definition of delirium was significantly related to levels of cognitive impairment identified by the BIMS. Individuals with delirium were more likely to have some level of cognitive impairment—(chi square $_{(N=2914,\ df=4)}$ = 305.55 (p <.0001)).

Summary

A structured cognitive assessment, the ***Brief Interview for Mental Status (BIMS)***, was completed by 90% of residents and was more highly correlated with a criterion measure of cognition than was the MDS 2.0 subjective assessment. It was preferred by the majority of staff and provides a recommended foundation for delirium assessments. We recommend using the BIMS for all residents capable of making themselves understood and reserving the MDS 2.0 subjective assessment only for those residents who are unable to make themselves understood or to complete the interview.

The ***Confusion Assessment Method (CAM)***, a validated delirium assessment used in other settings, was successfully used by NH staff after they attempted the BIMS and reviewed the resident's medical record. The MDS 3.0 CAM protocol yielded significant improvements in inter-rater agreement compared to MDS 2.0 delirium items. Staff preferred to use this validated tool over the old items. Prevalence of probable delirium was closer to prevalence rates reported in independent national tests. We recommend, therefore, that the more recognized and validated CAM be incorporated into MDS 3.0 to follow the structured cognitive assessment.

Rationale, Item Development, Results of National Test

The current MDS 2.0 item for mood disorder asks staff to note for the prior 30 days whether they observed each of the 16 indicators either: 0. Not at all, 1. Less than 5 days a week, or 2. Daily or almost daily.

Reasons for Testing Change in Mood Items

Research conducted before the implementation of the MDS demonstrated that the prevalence of major depression among cognitively intact or moderately impaired NH residents was 20-25%. In addition, another 30% of residents had less severe, but nevertheless clinically significant depression.[67] However, in spite of its malignancy, only about 10% of residents with recognized depression were treated.[68] More recent studies reveal that, despite an emphasis on depression in the MDS and associated quality indicators, as well as an almost 3 fold increase in the number of residents prescribed antidepressants,[69] 34% of residents may have clinically significant depressive symptoms.[70]

The current MDS 2.0 list of 15 observed indicators of depression has poor sensitivity for identifying persons with depressive symptoms or depression.[11,19,71-74] A consensus statement from the American Geriatrics Society (AGS) and the American Association for Geriatric Psychiatry (AAGP) concluded that the MDS alone, as currently used, is not adequate for depression screening and recommended that additional instruments be used.[75] Only 22% of nurses in our survey reported that the MDS 2.0 mood items are easy to complete accurately.

These concerns over limited reliability and sensitivity of the MDS 2.0 behaviorally based observational measures of depression are linked to several emerging "second generation issues." These include the possibility that clinicians may be instituting treatment for depression but not modifying or intensifying treatment for those who do not respond to first line approaches, and that un-targeted prescribing of antidepressants (even newer and safer agents such as the selective serotonin re-uptake inhibitors) may be responsible for substantial morbidity including falls.[76] It is important that assessments be specific and sensitive in identifying those who require treatment, and that they distinguish between those who are responding to care and those are not and therefore who require modification or intensification of treatment.

Resident voice should be central to assessing this important domain of quality of life.[21] Structured interviews to obtain self-report of DSM IV symptoms is the preferred approach for depression screening. One such structured and validated depression interview is the 9-item Patient Health Questionnaire (PHQ-9).[77,78] The performance of the PHQ-9 has been tested in older adults,[78-82] home health[83] and rehabilitation populations.[84] The PHQ-9 is in wide use in community and hospital settings and has been shown to be sensitive to change over time.[80] However, there are questions about how to identify which NH residents can provide self-reports of symptoms and about whether PHQ-9 will be reliable and valid when applied in nursing home populations.

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MDS 3.0 Mood Item Development: Summary

The VHA HSR&D research found that direct resident interview for signs and symptoms of depression is feasible, even in residents with moderately severe cognitive impairment. This finding is consistent with prior NH studies.[85] A newer finding was that the PHQ-9 required less time to complete and showed more internal consistency across varying levels of cognitive ability than did the Geriatric Depression Scale (GDS).[86]

The PHQ-9 has typically been administered as a self-report survey. In preliminary testing in 247 veterans, we developed a staff questionnaire with the intent of having the PHQ-9 collected by observers for residents who could not self-report. In this sample of 247 veterans, the PHQ-9 resident self-report was modestly, but significantly correlated with a staff version of the PHQ-9 (PHQ-9 Observation Version or PHQ-9 OV) developed for the pilot study. No other combination of staff assessment and resident self-report included in the pilot had a significant correlation.

These pilot findings suggested that NHs could use the same depression screener as is employed in other healthcare settings.

Methods for National Testing of MDS 3.0 Mood Item

We included the PHQ-9 resident interview and staff PHQ-9 observational version in the MDS 3.0 that underwent national testing. Because the PHQ-9 performed so well across all levels of cognitive ability in the pilot and because we did not want an exclusion criterion that indicated that staff should not try to communicate with all residents capable of communicating, we tested an approach that had the staff initiate mood interviews with all residents capable of communicating.

The interview was formatted in a manner approved by the PHQ-9 developer to allow an unfolding approach to item response. With this approach, the individual is oriented to the interview items. Then they are asked if they have been bothered by the symptom. If they respond yes, then they are asked to select a frequency response. This interview approach is more commonly used with vulnerable populations to facilitate response. In addition, the frequency response scale was approved by the developer, who reported that the approach had been tested and validated by the CDC. If the resident could not answer items, then the assessor was instructed to interview the staff member who knows the resident best to complete the observational PHQ-9. In national crosswalk testing, to avoid contamination of MDS 2.0 assessment by information gained in the structured interview, data collection staff were instructed to complete the MDS 2.0 mood section prior to conducting the resident PHQ-9 interview. They were also instructed to strictly record the resident's responses to the PHQ-9 interview. We reasoned that resident responses to PHQ-9 items were unlikely to be contaminated by the MDS 2.0 staff observations.

The national validation protocol included as criterion measures the modified Schedule for Affective Disorders and Schizophrenia (m-SADS)[87-89] for residents with 3MS score ≥ 30 and the Cornell Scale for residents with severe cognitive impairment (3MS<30).[90,91] In addition, we also tested the 15 item Geriatric Depression Scale[92] as an alternative to PHQ-9. Nurses were trained on all assessments by a geriatric psychiatrist and psychiatric

nurse with significant experience in training data collectors. For the m-SADS and Cornell, we went with the gold-standard nurses in pairs to a local nursing home where the nurses observed these trainers complete the assessment on an actual resident in a facility. In addition each nurse in the pair conducted a supervised assessment, being observed by the other nurse and by the psychiatrist or the psychiatric nurse trainer. All assessments were reviewed and discussed by the nurse pair and trainers.

In the national validation study, we tested gold-standard nurse to gold-standard nurse agreement on the validation items to further validate their assessments. For the comparison of MDS 3.0 items and MDS 2.0 items to the gold-standard measures, one gold-standard nurse independently collected the MDS 3.0 items and the other gold-standard nurse independently completed the validation assessment items. Order and gold-standard nurse assignment were switched for half of the cases in each facility. The MDS 2.0 was completed independently by facility nurses according to usual protocols. Mood assessments used the assessment reference date that was determined for MDS 2.0 scheduled assessment. MDS 3.0 items and validation measures were collected on the assessment reference date or the day after.

Methods for testing gold-standard nurse to gold-standard nurse and gold-standard nurse to facility-nurse agreement are those described for the entire sample in the methods chapter.

Nurses who participated in the MDS national study anonymously completed a feedback survey at the end of the national study. The structured questionnaire used Likert scale responses to obtain feedback on the PHQ-9 and also provided space for written comments.

Results of MDS 3.0 National Testing for Mood Items

We will present the results for the PHQ-9 resident interview that was completed by the majority of residents in both the crosswalk and validation samples. Then we will show the results for those residents who were unable to complete the PHQ-9 interview and therefore were tested with the staff PHQ-9 Observational Version (PHQ-9 OV).

Staff Feedback For PHQ-9 Resident Interview Was Positive

- 87% of the nurses who participated in the MDS 3.0 study anonymously rated the mood section as improved
- 88% felt the interview items were better than MDS 2.0 at capturing mood
- 84% felt that the interview could inform facility care plans
- 86% reported that even in the limited number of residents assessed, the interview items provided new insights into resident mood
- 77% reported that they felt that all residents who gave answers understood them (6% disagreed)

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Agreement Between MDS 3.0 Assessors Was Excellent

Kappas for gold-standard to gold-standard and gold-standard to facility-nurse PHQ-9 items were excellent. Average kappa for gold-standard to gold-standard PHQ-9 resident interview was 0.935 and average kappa for gold-standard to facility-nurse resident interview PHQ-9 was 0.968. Specific item reliabilities are shown in Appendix A.

Performance in Crosswalk Sample

Ability of nursing home residents to complete the PHQ-9 interview was high.

We defined completion of the PHQ-9 as responding to 6 or more PHQ-9 items and the related frequencies if the symptom item was reported as present. Of 3,258 residents in the sample, 2,797 (86%) completed the PHQ-9. For the 461 who did not complete the interview, 270 (8% of the total sample) were not approached and 191 (6% of total sample) had an interview attempted but they could not complete it.

Ability of staff to complete staff PHQ-9 Observational Version was also high.

Staff were able to complete observational PHQ-9 reports for 424 (92%) of the 461 residents who did not complete the resident interview.

In sum, 3,221 of the 3,258 residents (99%) in the sample had complete PHQ-9 scores.

Validation Sample, PHQ-9 Resident Interview

Ability of nursing home residents to complete the PHQ-9 was also high in the validation sample.

For the 418 residents in the validation sample, 349 (83%) answered all nine PHQ-9 items. 368 out of 418 residents (88%) met the completion criterion of 6 or more completed items.

MDS 3.0 Resident Mood Interview: Scores

For the 368 residents who completed the PHQ-9 in the validation sample, the average PHQ-9 score was 6 and the scores ranged from 0-26. Two approaches are available for viewing PHQ-9 results: 1) threshold definitions and 2) total severity score cut points.

o **Threshold Definitions for PHQ-9 Depression (results in table 6.1)**
   Minor depression: 2-4 symptoms more than ½ days AND one of these is symptom 1 or 2
   Major Depression: 5 + symptoms more than ½ days AND one of these is symptom 1 or 2

o **Total Severity Cut point Definitions (results in table 6.2):** A total severity score is obtained by adding frequency responses. The categories associated with severity cut points are shown in table 6.2

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Table 6.1 – MDS 3.0 Resident Mood Interview PHQ-9: Threshold Definition

Any Depression (PHQ-9)	Percent (%) of sample (n=368)
No Depression	65
Minor Depression	18
Major Depression	17

Table 6.2 - MDS 3.0 Resident Mood Interview PHQ-9: Cut point Definition

Depression Severity (PHQ-9)	Score Cut points	Percent (%) of sample (n=368)
None	0-4	52
Mild	5-9	20
Moderate	10-14	15
Moderately Severe	15-19	11
Severe	20-27	2

Geriatric Depression Scale (GDS), Alternative Resident Interview Scale

We also considered the 15-item Geriatric Depression scale as an alternative measurement strategy to screen for depression. 362 out of 418 residents (87%) completed the GDS (defined as fewer than 3 missing items). The mean GDS score was 4.67 and the range was 0-15. We defined possible depression as score 6-10 and probable depression as score >10.

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Table 6.3 – Resident Responses Using Geriatric Depression Scale (GDS) in Validation Sample

Geriatric Depression Scale (GDS) Group	Percent (%) of sample (n=362)
No Depression	59
Possible Depression	30
Probable Depression	11

MDS 2.0 Depression Measures Scores in Validation Sample

MDS 2.0 items were available to calculate the depression scores on 416 of the validation sample residents. We considered three existing approaches to scoring the MDS 2.0 mood items-- the scoring algorithm that attempts to match the DSM-IV diagnostic algorithm to determine depression prevalence for the quality indicator (QI), the scoring used in the quality measure in NH Compare as a continuous score, and the scoring logic that is used in RUGs, which yields a continuous measure and a 0/1 indicator.

Gold-standard Measure for Mood Disorder in Validation Sample

We used two different gold-standard measures for mood disorder, based on the resident's cognitive ability.

1. **Modified Schedule for Affective Disorders and Schizophrenia (m-SADS)**

For all cases where 3MS (gold-standard cognitive) score was $\geq$ 30, one gold-standard nurse collected m-SADS, a validated 23 item semi-structured interview in which symptoms are scored for presence and clinical significance. Categorical definitions in m-SADS are no depression, probable minor depression and probable major depression. See methods above for description of data collection and training. 324 residents were assessed with the m-SADS. For PHQ-9 comparison with gold standard measure, we compare the threshold definition for PHQ-9 depression. To consider agreement with MDS QI and MDS RUGs indicator, we recoded m-SADS as 0 = no depression 1 = minor or major depression.

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Table 6.4 – PHQ-9 Resident Interview had Highest Agreement with m-SADS Gold-standard Measure in Residents without Severe Cognitive Impairment

Candidate Item Compared to m-SADS	Weighted kappa (95% confidence interval)
PHQ-9 Resident Interview	0.685 (.614, .756)
GDS Resident Interview	0.518 (.441, .596)
MDS 2.0 QI Definition	0.117 (.045, .190)
MDS 2.0 RUGs Definition	0.154 (.055, .254)

2. Cornell Depression Scale

For all cases where 3MS score < 30, one gold-standard nurse collected the Cornell Depression Scale, a validated 19 item structured assessment for mood disorder that considers caregiver report, the resident report, observations of resident behavior, and medical record review. Possible Cornell scores range from 0 - 38.

Gold-standard nurses attempted Cornell assessments on 88 cases in the validation sample. Of these 88, we excluded 8 from analyses (either had 3MS scores > 30 and should have been administered the m-SADS, or had three or more items missing in Cornell). Thus, the sample for whom we had complete Cornell scores was 80. Of these 80 residents, 42 were unable to complete the PHQ-9 interview and thus are in the staff PHQ-9 sample. However, 38 (48%) successfully completed the PHQ-9 resident interview. In other words, even though they had severe cognitive impairment on the 3MS, they were capable of making themselves understood at least some of the time AND were able to complete the PHQ-9 interview. 33 of these residents also completed the GDS.

We compared the continuous score on the Cornell depression scale to the PHQ-9 Severity Score, the total GDS score, the total score on MDS 2.0 NH Compare QM cross-sectional count, and the total score on MDS 2.0 RUGs.

Table 6.5 – PHQ-9 Interview had Highest Agreement with Gold-standard Measure in Residents with Severe Cognitive Impairment

Candidate Item Compared to Cornell	Correlation
PHQ-9 Resident Interview	.63 (p < .0001)
GDS Resident Interview	.41 (p = .0193)
MDS 2.0 QI Definition	.34 (p = .0343)
MDS 2.0 RUGs Definition	.21 (p = .2031)

Results of MDS 3.0 National Testing for Staff PHQ-9 Observational Version (PHQ-9 OV) Mood Items

MDS 3.0 Staff PHQ-9 Mood Assessment:

The PHQ-9 staff observation version includes the 9 signs and symptoms of depression found in PHQ-9 plus an additional irritability item. In the data below, we show the PHQ-9 score that includes the additional irritability item. This expanded PHQ-9 is named PHQ-9 Observer Version (PHQ-9 OV).

Staff Feedback For Staff PHQ-9 OV Was Positive

- 72% reported that they found that observation of PHQ-9 items was easier than observation of MDS 2.0 items
- 90% felt that staff detection and communication about mood disorder might improve if they learned to watch for PHQ-9 observational version (PHQ-9 OV) signs and symptoms

Agreement Between MDS 3.0 Assessors for PHQ-9 OV Was Excellent

The kappas for the observational PHQ-9 staff report in the gold-standard to gold-standard comparison (average kappa = .873) and for gold-standard to facility-nurse were excellent (average kappa = .923). Specific item reliabilities are shown in Appendix A.

Performance of PHQ-9 OV in Crosswalk Sample

As noted above, staff completed the observational PHQ-9 reports for 424 (92%) of the 461 residents who did not complete the resident interview.

Performance in Validation Sample

Ability of staff to complete staff PHQ-9 OV in the validation sample was also high

All 48 residents who did not complete the resident interview had complete staff assessments (6 or more items scored).

Chapter 6: Mood Items

Staff Assessment of Mood Behaviors Using PHQ-9 OV

As noted above, in preliminary testing in 247 veterans, our research team *a priori* included an irritability item in the PHQ-9 for staff observation. This is an observable behavior that may indicate underlying mood disorder, particularly in cognitively impaired populations. The PHQ-9 OV showed modest correlation between the staff observations and resident report. Because the addition of the irritability item improved pilot test performance, we tested it in the national sample as well.

MDS 3.0 Staff PHQ-9 OV: Scores

Considering the 10 items, the average score was 6 and ranged from 0 to 17. We used two approaches to view PHQ-9 OV results: 1) threshold PHQ-9 OV definitions and 2) total PHQ-9 OV severity score cut points.

o   **Threshold Definitions for Depression (PHQ-9 OV)**

Minor depression: 2-4 symptoms more than ½ days AND one of these is symptom 1, 2 or 10

Major Depression: 5 + symptoms more than ½ days AND one of these is symptom 1, 2 or 10

Table 6.6 - MDS 3.0 Staff Assessment Mood Interview PHQ-9 OV: Threshold Definition

Any Depression (PHQ-9 OV)	Percent (%) of sample (n=48)
No Depression	58
Minor Depression	31
Major Depression	10

Chapter 6: Mood Items

Table 6.7 - MDS 3.0 Staff Assessment Mood Interview PHQ-9 OV: Cut point Definition

Depression Severity (PHQ-9)	Score Cut points	Percent (%) of sample (n=48)
None	0-4	54
Mild	5-9	13
Moderate	10-14	23
Moderately Severe	15-19	10
Severe	20-30	0

Table 6.8 – PHQ-9 OV had Highest Agreement with Gold-standard Measure in Residents with Severe Cognitive Impairment Who Could Not Be Interviewed

Candidate Item Compared to Cornell	Correlation
PHQ-9 OV Staff Interview	.84 (p < .0001)
MDS 2.0 Quality Measure	.14 (p = .3764)
MDS 2.0 RUGs Definition	.28 (p = .0782)

Summary

NH staff successfully used the ***Patient Health Questionnaire (PHQ) -9 interview***, a validated depression screener that allows identification of changes in depression severity over time, to assess their residents. Eighty-six percent of the 3,258 residents in the national study completed the PHQ-9 interview. The majority of staff who used the PHQ-9 interview found it better at capturing resident mood than the MDS 2.0 subjective mood items. The staff also preferred the related observer version of the PHQ-9 for those residents who were unable to complete the interview. In the validation sample, both the PHQ-9 resident interview and the ***PHQ-9 observer version (PHQ-9 OV)*** were significantly more highly correlated with a criterion assessment of depression than was the MDS 2.0 mood item. We recommend, therefore, that the PHQ-9 interview be used for all residents capable of making themselves understood and that the PHQ-9 observation version be used for those residents who cannot complete the interview.

Rationale, Item Development, Results of National Test

The MDS 2.0 includes 5 behavioral symptoms for which staff are asked to rate frequency (0=none, 1=one to three of last 7 days, 2=four to six of the last 7 days, 3=daily) and alterability (0=not present or easily altered, 1= not easily altered). The MDS 2.0 behavior symptoms are: a. wandering (moved with no rational purpose, seemingly oblivious to needs or safety), b. verbally abusive behavioral symptoms, c. physically abusive behavioral symptoms, d. socially inappropriate/disruptive behavioral symptoms, and e. resists care. The MDS 2.0 problem conditions checklist (J1) includes delusions (J1e) and hallucinations (J1i) along with items such as edema (J1g) and internal bleeding (J1j).

Reasons for Testing Change to Psychoses and Behavior Items

The management of nursing home residents with psychotic and behavioral symptoms has been central to concerns about the quality of NH care. The historic misuse of physical restraints and the overuse of psychotropic drugs as chemical restraints were among the major issues that led the federal government to take an active role in NH reform. Behavioral and psychotic symptoms are a leading reason for persons with Alzheimer's disease to be admitted to NHs.[93] In a national sample of NH residents, 28% of females and 35% of males were reported to have at least one behavioral symptom.[23]

We faced important questions about how these symptoms should be conceptualized and managed. A consensus statement by the American Geriatrics Society and the American Association for Geriatric Psychiatry underscored the importance of quantifying behavioral symptoms and concluded that the MDS 2.0 "as routinely used, is inadequate to identify all residents with behavioral symptoms."[75] The current MDS 2.0 items do not appear to be helpful in identifying treatment thresholds and thus do little to inform treatment need or assessments of treatment response.[75] Providers found that symptom groupings did not match clinical labels. Of the nurses in our sample, only 41% rated the MDS 2.0 behavior items as easy to complete accurately.

Additionally, consumer groups strongly objected to the wording of current MDS 2.0 items, believing them to be pejorative and focused on the resident as the only source for potential problems (verbally abusive, physically abusive, socially inappropriate/disruptive and resists care). On the other hand, providers objected to an alternatively proposed wording that labeled behaviors as "unmet need." Finally, CMS/ASPE-funded consultants recommended that important items such as psychoses be moved from a "check all that apply" format to a yes/no format to improve coding and to facilitate transition to electronic health records.

The limitations of MDS 2.0 behavior items described above are important because care planning for behavior management must involve careful risk-benefit analyses that consider both the safety and effectiveness of alternative strategies.[94] For example, these symptoms can respond to judicious use of psychotherapeutic medications.[95-97] However, these agents can be associated with substantial risks, including diabetes, falls, stroke, and sedation.[76,98,99] At the same time, several well-conducted studies provide evidence that

symptoms can be significantly decreased by addressing unmet needs or by altering NH environments that are either under-structured or over-stimulating.[100,101] Because of these trade-offs, behavioral items that better inform staff action would aid clinicians and make significant improvements to this MDS 2.0 section that could be important for enhancing assessment and resident quality of life.

MDS 3.0 Psychoses and Behavior Item Development: Summary

VA HSR&D and community pilot work aimed to improve these items by allowing clearer language, symptom grouping, and consideration of the impact of behaviors. In pilot testing in a sample of 287 VA NH residents, the revised MDS 3.0 behavior item groupings had greater convergent and construct validity than did MDS 2.0 items, suggesting that staff could assess and report the impact that behaviors were having on the resident and facility environment. The changes effectively aligned the behavior items with the empirically derived factor of "agitation" developed by Cohen-Mansfield and colleagues, and that have been found to be reliable and sensitive to treatment-related changes.[102]

In addition, as part of our pilot activities, we worked closely with both providers and resident advocates to identify labels and groupings that would support better care planning and avoid stigma.

VA HSR&D pilot testing showed that staff could identify specific elements of care that residents resisted. However, resisting care is multifactorial and a lengthy, multiple-item, list would be required to capture all potential elements. It was decided, therefore, that items identifying which elements of care were resisted would be included in future Resident Assessment Protocols (RAPs) to help staff identify triggers that need to be addressed.

Revised behavior symptoms labels were: a) Physical Behavioral Symptoms Directed Toward Others; b) Verbal Behavioral Symptoms Directed Toward Others; c) Other Behavioral Symptoms not directed toward others. Impact on Resident items asked if the identified symptom: placed the resident at risk for physical illness or injury; significantly interfered with resident care; significantly interfered with resident's participation in activities or social interaction. Impact on others consider whether the symptom(s): put others at significant risk for physical injury; significantly intruded on the privacy or activity of others; significantly disrupted care or living environment.

Finally, because trainers and assessment coordinators noted difficulty in achieving reliable understanding of the psychoses items, we grouped these items in the behavior section and included definitions on the assessment form to improve accuracy and efficiency of coding.

Methods for National Testing of MDS 3.0 Psychoses and Behavior Item

We included the revised behavior and clarified psychoses items in the national MDS 3.0 test. For our gold-standard measure of behavior disturbance, we used the Cohen Mansfield Agitation Inventory (CMAI)[103] and for psychoses, we used the

Chapter 7: Behavior Items

Neuropsychiatric Inventory (NPI).[104] The CMAI includes 29 items scored for frequency (1=never, 7=several times an hour).The CMAI reduces to 3 factors: Physical toward others, Verbal toward others, Other. NPI modules for delusions and hallucinations were the comparison measures for the psychosis items. The assessor scores the NPI based on staff interviews that should include the staff member who knows resident best. The assessor's interview is informed by an initial chart review. The NPI includes up to 22 items that capture specific descriptors of the psychoses, frequency, and severity.

Gold-standard nurses were trained on these gold-standard items by a geriatric psychiatrist and a psychiatric nurse. In the national validation study, we tested gold-standard nurse to gold-standard nurse agreement on the validation items to further validate their assessments. For the comparison to the gold-standard measures, one gold-standard nurse independently collected the MDS 3.0 items and the other gold-standard nurse independently completed the validation assessment items (CMAI and NPI). To minimize study design effects, order and gold-standard nurse assignment were switched for half of the cases in each facility. Interviewers were unaware of facility MDS 2.0 scores. The MDS 2.0 was completed independently by facility nurses according to usual protocols. Assessments used the assessment reference date that was determined for the MDS 2.0 scheduled assessment. MDS 3.0 items and validation were collected on the assessment reference date or the day after.

For crosswalk comparisons, facility nurses were asked to complete MDS 2.0 behavior and psychoses items per standard protocol. They were allowed to complete MDS 2.0 and MDS 3.0 in the order that was most convenient for them, but were instructed not to view the assessment that was done first when completing the second. Both assessments used the same assessment reference date. Methods for obtaining gold-standard nurse to gold-standard nurse and gold-standard nurse to nursing facility-nurse agreement are those described for the entire sample in the methods chapter.

Nurses who participated in the MDS national study anonymously completed a feedback survey at the end of the national study. The structured questionnaire used Likert scale responses to obtain feedback on the behavior items and also provided space for written comments.

Results of MDS 3.0 National Testing for Behavior Items

Staff Feedback Was Positive
- 91% of respondents rated the section as improved
- 90% rated the behavior symptoms as easy to complete accurately
- Respondents endorsed that the following items were clear:
    - Psychoses items (82%)
    - Physical behavioral symptoms directed toward others (94%)
    - Verbal behavioral symptoms (94%)
    - Other behavioral symptoms not directed toward others (90%)

- o Rejection of care (88%)
  - o The 3 new impact of behavior items (86-88%)
- 88% rated the new impact of behaviors items as providing useful or important information
- 79% rated the impact of wandering items as contributing important additional information (7% disagreed)
- 87% felt that the instructions for completing the wandering items were helpful in defining this behavior (3% disagreed)
- 82% felt that the instructions for completing the psychoses items were helpful in clarifying this behavior (2% disagreed)

Agreement Between MDS 3.0 Assessors Was Excellent

For psychosis items, agreement between assessors was excellent. Average gold-standard to gold-standard nurse kappa was .919. The average gold-standard to facility-nurse kappa was even higher (.941). On behavioral symptom items gold-standard to gold-standard nurses had an average kappa of .900 while gold-standard to facility-nurses had an average kappa of .942. Specific item reliabilities are included in Appendix A.

Validation Sample:

MDS 3.0 Prevalence of psychoses for the validation sample
For those who had MDS 3.0 items and the criterion measure (n= 418)

- Prevalence of hallucinations = 3%
- Prevalence of delusions = 6%

MDS 2.0 Prevalence of psychoses for the validation sample
For those who had MDS 2.0 items and the criterion measure (n=397)

- Prevalence of hallucinations = 3 %
- Prevalence of delusions = 5 %

Table 7.1 – MDS 3.0 Had Higher Agreement with Criterion Standard for Psychosis

Neuropsychiatric Inventory Presence	MDS 3.0 kappa (95% confidence interval)	MDS 2.0 kappa (95% confidence interval)
Hallucinations	.921 (.811, 1.00)	.228 (.030, .426)
Delusions	.881 (.787, .975)	.308 (.160, .455)

Chapter 7: Behavior Items

Behavior Symptoms

The following tables (Tables 7.2-7.4) show the distribution of behavior problems in the validation sample, based on the 3.0 items, the 2.0 items, and the gold-standard CMAI. The levels of agreement between the respective MDS items and the criterion measure for behavior disturbance are also tabulated.

Table 7.2 - Prevalence of behavior problems in MDS 3.0 validation sample

MDS 3.0 (n = 418)	Percent
Physical Behavioral Symptoms Directed Toward Others	5
Verbal Behavioral Symptoms Directed Toward Others	7
Other Behavioral Symptoms Not Directed Toward Others	6

Table 7.3 - Prevalence of behavior problems in MDS 2.0 validation sample

MDS 2.0 (n = 417)	Percent
Physically Abusive Behavioral Symptoms	2
Verbally Abusive Behavioral Symptoms	5
Socially Inappropriate/Disruptive Behavioral Symptoms	6

Table 7.4 - Prevalence of CMAI factors in validation sample of 418

CMAI Factor	Percent
Physical Toward Others	6
Verbal Toward Others	12
Other	14

Table 7.5 – MDS 3.0 Had Higher Agreement with Gold-standard Measure for Behavior

CMAI Factor	MDS 3.0 kappa (95% confidence interval)	MDS 2.0 kappa (95% confidence interval)
Physical toward others	.856 (.743, .969)	.228 (.030, .426)
Verbal toward others	.725 (.612, .838)	.308 (.160, .455)
Other	.532 (.420, .662)	.215 (.117, .314)

Summary

Revised *behavior symptom items* better align with established factors for assessing agitation. The revised items use language acceptable to both providers and consumers to label behaviors and are more highly correlated with criterion measures of behavioral problems. New items obtain information on the effect of behaviors on resident quality of life and the care environment and serve as potential severity measures. Staff who used the new items preferred them to the MDS 2.0 behavior items and reliability was high. Therefore, we recommend that the revised behavior section be used.

Revised psychoses items provide a more logical grouping for the items and further improve reliability and efficiency of data collection by providing definitions on the form. We recommend that the revised psychoses items also be included in the behavior section.

Rationale, Item Development, Results of National Test

MDS 2.0 includes an assessment of past Customary Routine patterns and current activities. A twenty item checklist asks staff to report the resident's customary routine for the year prior to admission. The activity section asks staff to identify the average time the resident is involved in activities (4 response options), preferred activity setting (5 settings possible), and general activity preferences (13-item check list).

Rationale for Testing Change to Customary Routine and Activities

Nursing homes (NHs) are not only health care institutions; they are places where people live. NHs serve multiple and sometimes evolving needs, as important sites for both rehabilitation and treatment, but also as a terminal residence for many.[105] The number who will spend time in NHs prior to death is expected to increase dramatically over the coming decades.[106] Principles of autonomy, dignity, and comfort should be integrated into care for all residents regardless of whether they are being admitted for rehabilitation or long-term supportive care. Residents should be assured of comfort and access to clear information about their condition; they should also be assured that they will be active participants in assessments and care planning whenever possible.[107-109] Formal resident input into assessment and planning is important because residents differ in their lifestyle preferences and on the importance they place on different types of preferences.[110]

Some investigators have focused on day-to-day events in NHs because of the unique residential role these facilities play.[20,111-114] Qualitative interviews reveal that the following areas related to NH care are important to residents and families: choice and personal control over daily life activities, assistance with ADLs, the interpersonal quality of the assistance, privacy, promotion of function, daily physical activity, access to assistive devices, information about health status and participating in care assessments and planning.[113-116]

Unfortunately, the MDS 2.0 Customary Routine and Activity items do not require that residents be interviewed, nor do they provide an assessment tool that has been specifically designed and tested for use in NH populations. Our expert panels reported that the current customary routine section of the MDS 2.0 was not being used and lacked credibility for care planning. Both providers and consumers on our TEP and Validation panels expressed concern about the ability of the Customary Routine and Activities items to adequately capture resident experience. These experts noted that the lengthy list of customary routine items in MDS 2.0 does not provide insight into the relative value that a resident places on the specific items. The experts also felt that observing activity preferences was an inadequate substitute for directly interviewing residents, if the resident could be interviewed. These recommendations were confirmed by the anonymous respondents to the MDS 2.0 survey, where only 30% rated MDS 2.0 items as improving facility care planning.

Chapter 8: Customary Routine and Activity Items

MDS 3.0 Customary Routine and Activities Item Development, Summary

In discussing alternative items, both providers and consumers expressed strong reservations about having staff collect non-confidential satisfaction items that would be publicly reported at a facility level. Our expert panels, however, strongly endorsed a strategy of asking NH residents to rate the importance that they assigned to specific activities and routines. Several multi-item scales have been proposed that differ in their definitions of quality of life and the domains they address.[117-120] Although these tools provide an excellent starting point, they were not designed to be included in an abbreviated screener such as the MDS. Therefore, the VA HSR&D pilot team undertook testing of existing and possible items for a preference-based assessment. Potential items were mapped to quality of life domains identified by Kane et al.[20]

The VHA team used cognitive testing to explore resident understanding of candidate items and responses. These cognitive interviews revealed that rephrasing questions about quality of life to elicit simple yes/no responses did not simplify the questions for residents. Indeed, residents' narrative responses revealed significant discordance when compared to their yes/no answers.[121] In addition, testing appeared to confirm the advice of our panels regarding staff assessment and confidentiality of sensitive questions. When staff members were present, residents were hesitant or refused to answer questions about the quality of their care; however, they were willing and able to provide answers to questions about their daily preferences and activities.

The research team developed the resident Preference Assessment Tool (PAT) to systematically solicit resident preferences related to quality of life domains identified by Kane et al. Pursuant to the recommendation of the expert panels, these items were developed to capture the importance that a resident assigned to a particular topic or activity. In testing preference items, we again considered "simpler" yes/no formats for the resident interview items. We found that many residents struggled with reducing their experience to yes/no. They found it easier to answer a question if they were allowed to select from a range of choices that reflected the variations they experience day-to-day. This phenomenon is well recognized in interview science. If an item asks about something that is not fixed or absolute, then having more than two response choices can make responding easier for older adults. We tested several different response sets for the customary routine and activities in MDS 3.0 to allow this choice while matching the responses to the question being asked.

Testing of response scales revealed the need for an "important but can't do" response option to improve consistency in responses because residents who perceived physical or environmental barriers had difficulty selecting a preference and were inconsistent in responding.[122] Developmental and pilot testing in VA nursing homes showed that most residents with moderate cognitive impairment and even some with severe cognitive impairment were able to respond to questions about the importance of particular quality-of-life domains and activities, using the full range of response options. Forty-eight hour test re-test showed acceptable agreement, even in residents with moderate or severe cognitive impairment. Retesting after 4 months as requested by a VA expert advisory

panel showed some change in preferences, arguing for more than a baseline assessment of preferences.

During the development of the PAT, we found that asking about the importance of alcohol created social anxiety because residents worried that a yes answer implied that they had an alcohol problem. Residents were slightly more comfortable answering whether they wanted alcohol to be offered. Because some consumer groups felt that this was a topic that should be considered, we rewrote the item using a different response scale that asked if the resident would like to be offered alcohol on occasion.

Methods for National Testing of MDS 3.0 Customary Routine and Activity Items

Based on these pilot results, we included the Preference Assessment Tool in the national MDS 3.0 test. Data collectors were instructed to attempt the interview with all residents who were capable of communicating. If the resident was unable to communicate or failed to provide sensible answers to more than 3 items, then the significant other was to be interviewed. If the significant other was not available, then staff members were instructed to proceed to a section for reporting staff observation of resident behaviors during specific daily routines and activities. The staff observations were limited to those residents who could not self-report and who did not have a proxy available.

Methods for obtaining gold-standard nurse to gold-standard nurse and gold-standard nurse to facility-nurse agreement are those described for the entire sample in the previous methods chapter.

Nurses who participated in the MDS national study anonymously completed a feedback survey at the end of the national study. The structured questionnaire used Likert scale responses to obtain feedback on PAT and also provided space for written comments.

Results of MDS 3.0 National Testing for Customary Routine and Activity Items

Staff Feedback was generally positive for most items. A few items received lower ratings.

- Percent of respondents rating MDS 3.0 more useful than MDS 2.0 for care planning:
  - o 81% for customary routine preference items
  - o 77% for activity preferences
- Percent of respondents reporting that MDS 3.0 changed their impression of residents' preferences:
  - o 80% for customary routine items
  - o 83% for activity preferences
- Percent of respondents reporting post-acute care residents appreciated being asked:
  - o 78% for customary routine items (9% disagreed)
  - o 75% for activity items (3% disagreed)

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Staff Feedback for Customary Routine and Activities (continued)

- Percent of respondents reporting long-stay residents appreciated being asked:
    - 68% for customary routine items (10% disagreed)
    - 78% for activity items (4% disagreed)
- Percent reporting that some residents who answered didn't appear to understand
    - 1% for the routine preference items
    - None for the activity items
- 36% reported that at least one preferred routine item was difficult to answer. If they answered yes, they were asked to identify the item (s). The two items identified three or more times were:
    - Choice of bath type[iv]
    - Stay up past 8 PM[v]
- 26% said that at least one item was difficult for residents to answer for activity items. The item identified three or more times was
    - The importance of doing things away from the nursing home[vi]

    The majority of facilities reported that they would serve alcohol to a resident if approved by the resident's physician. However, an item that asked if the resident wanted to be offered alcohol on occasion was less well received.
- 30% of staff respondents reported that residents objected to the item
- 23% reported that the item was difficult for residents to answer[vii]

Agreement Between MDS 3.0 Assessors Was Excellent

Both the gold-standard to gold-standard and the gold-standard to facility-nurse agreement for resident interview were high. Likewise, independent assessment of staff observations for those residents who could not be interviewed showed excellent agreement. Item specific agreements and kappas are shown in Appendix A.

[iv] Our post-trial TEP had mixed views about retaining or deleting the item on bath choice. We retained it for a variety of reasons, including the fact that focus groups with ombudsmen revealed this to be a significant source of conflict and that in the current national trial, the majority of residents said that bath choice was important to them.
[v] In the national trial, some residents found the item on bedtime difficult to answer. Based on advice from our TEP, we revised and tested alternatives that focused on flexibility, including one that asked residents how important it was to choose their own bedtime. Based on this post-trial testing, we recommended this revised item for inclusion in the MDS 3.0.
[vi] Our pilot testing revealed that "doing things away from the NH" was not frequently identified by consumers as vital to the most vulnerable populations in facilities. We decided that the overall gain from this item did not outweigh the burden of including it in the MDS, so we did not recommend including it. We reviewed this decision with our TEP.
[vii] During pilot testing, we observed that many residents were reluctant to report alcohol as important, expressing concerns about social or medical appropriateness. Even after we changed the item to ask residents if they would like to be offered alcohol if their doctor approved, about one-third of staff said residents objected to the question and only 16 % of the national sample reported yes. Given the consistent limitations with this item, the TEP agreed that we should not retain it in the MDS 3.0.

Chapter 8: Customary Routine and Activity Items

Crosswalk Sample

Nursing home residents were able to complete both sections of the Preference Assessment Tool (PAT)

Figure 8.1 shows the percent of residents who were able to respond to the items in the preferred routine interviews, as well as the percent of interviews that were completed by a significant other.

Figure 8.1 - The Majority of Residents Completed the Preferred Routine Items (n=3258)
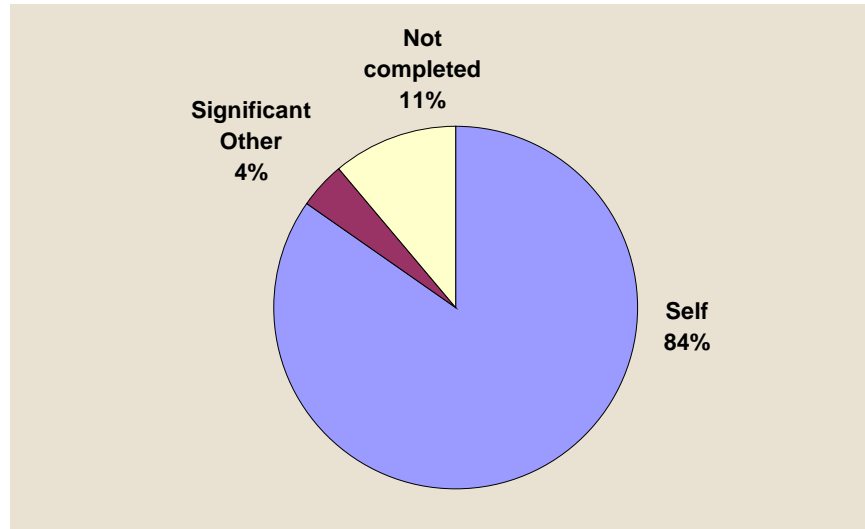
84% of residents sampled were able to complete the Preferred Routine items in the preference assessment tool. A significant other completed the items for an additional 4% of residents. Similarly, 83% of the residents sampled were able to complete the Preferred Activities items. A significant other completed an additional 4%.

Only 13% of residents (or significant other) were unable to complete both sections of the PAT and required staff assessment of observed responses.

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Use of Preference Assessment Tool Response Scale

We examined the distributions of the responses to understand whether residents had used the full range of responses. Analysis of the national test showed that residents used the full range of response options available to them. The fact that they used all of the options lends additional support for the utility of the response scales.

Figure 8.2 shows the responses for the 3 items with the greatest number of "important but can't do, no choice" responses. These 3 items were:

- How important is it to you to do your **favorite activities**?
- How important is it for you to **choose between a tub bath, shower, bed bath, or sponge bath**?
- How important is it to you to do things **away from the nursing home**?

Figure 8.2 - PAT Items with the Greatest Frequency of "Important, but Can't Do" Responses
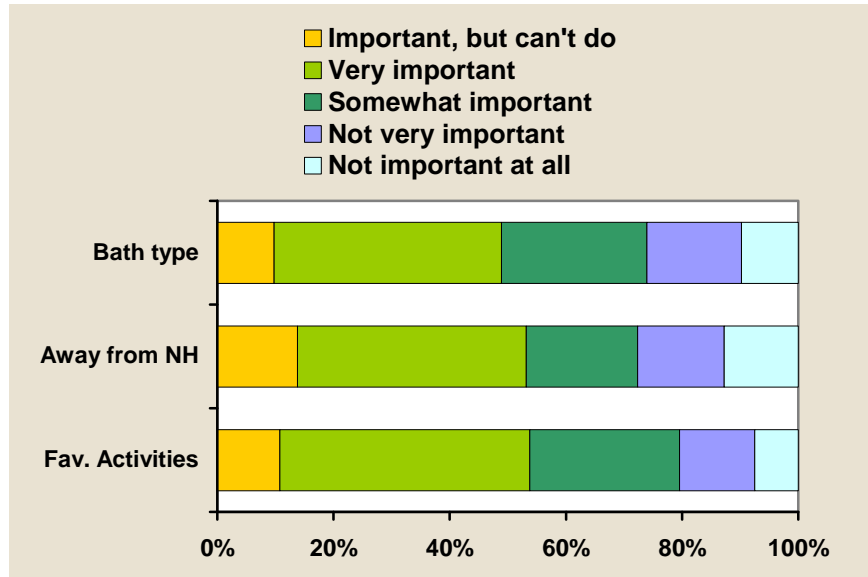
Residents also provided varied importance ratings in response to the remaining items in the preference assessment tool. For every remaining item, at least some residents selected the 'important but can't do' response, although with less frequency than for the 3 items above.

Preferences for Customary Routine

The following figures show the item response distributions for the remaining customary routine and activities items. For these figures, the denominator for % response is the number of residents completing the section. Items are arranged from those with lowest number of importance ratings to those with highest.

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The remaining items in the Preferred Routine item set are:

- How important is it to you to have your **family** or a close friend involved in discussions about your care?
- How important is it to you to take care of your **belongings** or things?
- How important is it to you to choose what **clothes** to wear?
- If you could go to bed whenever you wanted, how important would it be to you to stay up past **8:00 p.m**.?
- How important is it to you to have a place to **lock** your things to keep them safe?
- How important is it to you to be able to use the **phone** in private?
- How important is it to you to have **snacks** available between meals?

Figure 8.3 illustrates a wide range of responses in what residents thought was important. For example, 70% thought family involvement in care planning was very important, and 59% thought it was very important to be able to take care of one's own belongings. In contrast, only 26% of residents thought it was "very important" to have snacks available between meals. This variation indicates that individuals value different things, that they will express those preferences if asked, and that having a number of items and a range of responses is useful for capturing differences in resident preferences.

Figure 8.3 - Response Choices for Preferred Routine were Varied (n=2852 who completed the interview)
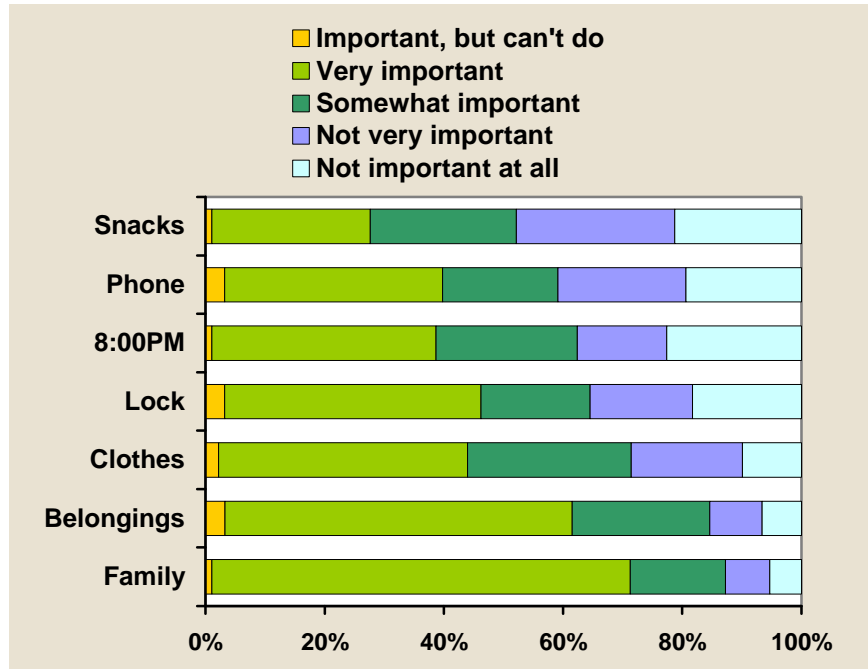
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Activities

The activity items also showed variation in responses. In Figure 8.4, activities are arranged from those with the lowest number of importance ratings to those with the highest. The items in the activities item set are:

- How important is it to you to **go outside** to get fresh air when the weather is good?
- How important is it to you to keep up with the **news**?
- How important is it to you to participate in **religious services** or practices?
- How important is it to you to listen to **music** you like?
- How important is it to you to have books, newspapers, and magazines to **read**?
- How important is it to you to do things with **groups** of people?
- How important is it to you to be around animals such as **pets**?

Responses varied across items. For example, 58% of residents thought it was "very important" to go outside when the weather is good; while only 23% thought it was very important to spend time around animals such as pets. This variation indicates that residents value different things. If they do not ask directly, care providers may miss very important differences in resident preferences.

Figure 8.4 - Response Choices for Activity Preferences were Varied
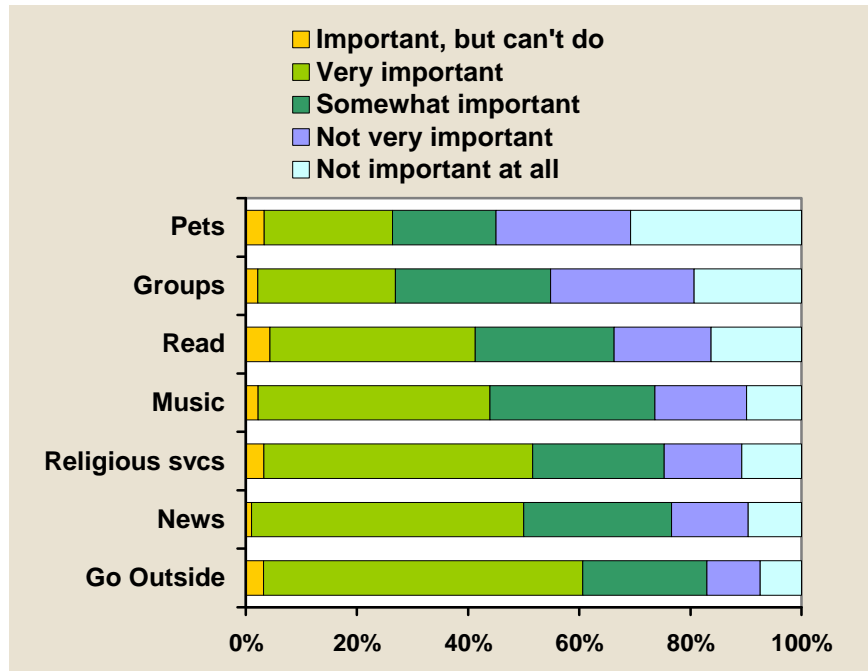
Chapter 8: Customary Routine and Activity Items

Alcohol Preferences

For the alcohol item, residents were asked: *If your doctor approves, would you like to be offered alcohol on occasion at meals or social events?*

The majority, 71%, indicated that they would not want to be offered alcohol. Only 1% indicated that they preferred to be offered alcohol but that they were unable to do so or had no choice.

Figure 8.5 - Distribution of Responses for Alcoholic Beverages (n=3048)
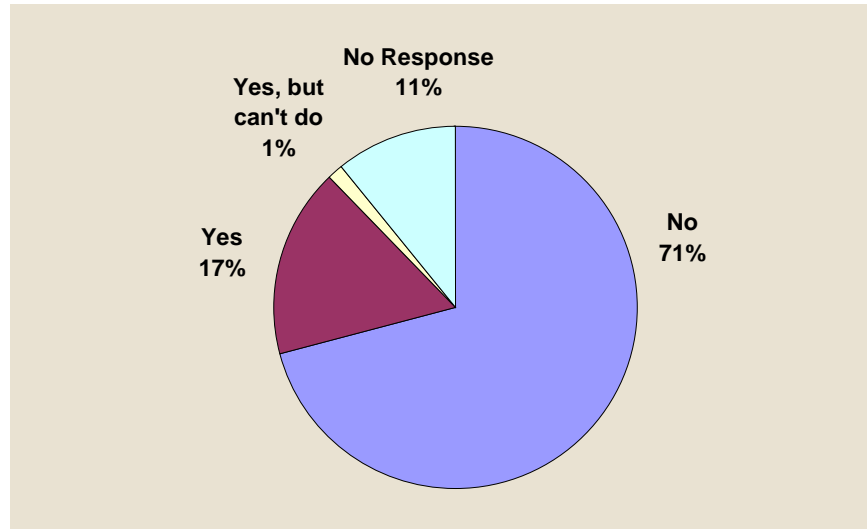
Summary

A new *Preference Assessment Tool (PAT)* was designed to allow NH staff to obtain resident preferences surrounding many of the domains in the University of Minnesota's quality of life measurement tool. The PAT obtains resident importance ratings for daily customary routine and for activities. The PAT was completed by 83% of residents scheduled for MDS assessments, and families or significant others completed an additional 4%. Staff preferred these items to the MDS 2.0 customary routine check list and reported gaining new insights into resident preferences. Staff feedback identified a few items in this section as potentially problematic; we addressed these items in post-trial evaluations. We recommend that the revised PAT be used for all residents capable of making themselves understood and that input be sought from family or significant others for those residents unable to complete the PAT. We further recommend that the revised staff observation of Daily and Activity Preferences items be completed only for those residents without a completed PAT.

Rationale, Item Development, Results of National Test

The MDS 2.0 fall items ask if the resident fell in the past 30 days and in the past 31-180 days. The MDS 2.0 does not ask about the number or type of fall.

Rationale for Testing Change:

Frail elders who live in nursing homes (NHs) have an extremely high fall risk due to chronic diseases, functional and gait impairments, and dementia.[123] Each year, 45-70% of the 1.7 million residents in U.S. NHs fall. Of these, 30-40% will fall two or more times and 11% will experience a serious injury from the fall.[124,125] Loss of function and increased fears associated with falling are common results of falling.[126,127] Because falls in older NH residents often result from poorly identified and managed risk factors that are potentially preventable, falls are a major source of medical errors and patient safety problems in this population.[123,124,128] The literature strongly supports a multifaceted approach to fall prevention in NHs.

A history of falling identifies persons at increased risk for future falls. Potentially preventable risk factors include postural hypotension, psychotropic and cardiovascular medications, restraints, and balance problems during transferring and ambulation.[123,129-136] Fall prevention interventions that target risk factors have shown promising results.[137,138] One clinical trial in 14 NHs showed a 19% reduction in the number of recurrent falls.[139,140] This multifaceted program addressed risk in four safety domains: environmental and personal safety, wheelchairs and other equipment, psychotropic drug use, and transferring and ambulation balance and safety.

Concerns have been raised about the content of the falls item in MDS 2.0 as well as the utility of the MDS 2.0 balance item for identifying mutable fall risk. During the initial stage of this project, physical therapists and fall prevention experts reported that the MDS 2.0 balance items did not capture activities where assistance and support are most variable and failed to assess highest risk activities. The validation panel identified balance as an important section for revision because abnormal balance and gait place residents at increased risk for falls. Content experts and providers were also concerned that MDS 2.0 failed to distinguish falls that occurred before residents were admitted to the NH from those that occurred in the facility.

The falls items were initially revised by a CMS workgroup before the RAND revision activities were contracted. The revisions intended to clarify when falls occurred and to identify their clinical effects. The validation panel preferred the revised items and other feedback was also positive although concerns were raised about the complexity of the response choices for the clinical effects of the fall and about the inclusion of service delivery choices in the definition of fall outcomes in the draft item.

Chapter 9: Gait and Falls Items

Item Development: Summary

Balance

Fall experts and physical therapists provided input during our VHA and community pilot work. As a result, we refined the balance items to guide NHs in identifying components of gait and transitions that relate to fall risk. Balance was rated during a) moving from seated to standing; b) walking; c) turning around; d) moving on and off toilet; e) surface-to-surface transfer.

We developed training videos to aid staff in assessing gait and balance during transfers and walking. Residents with varying gait and transfer ability were included in the videos. As part of the integration testing phase, expert clinicians and nurses who completed the MDS viewed the videotaped clips and rated balance using the relevant MDS 3.0 items.

Falls

Different fall items were created for admission versus follow-up assessments. Pursuant to the recommendation of a standardized terminology contractor to CMS and ASPE, the admission falls assessment was changed from a "check all that apply" format to a "yes/no" response. Falls prior to admission were separated from falls during initial transition into the facility.

The follow-up assessment includes categorical responses for the number and outcomes of falls in the facility. In our initial pilot work, we tested an approach that recorded the absolute number of falls, however, the frequency of 3 or more falls was low in the pilot and nurses had difficulty reliably identifying the absolute number of falls in this outlier group. Based on the literature and expert opinion, we thought it was important to distinguish between 0 falls, 1 fall, or 2 or more falls, because those in the latter category are at substantially higher risk for future falls and may require more intensive interventions.

Our initial pilot activities also indicated that staff might find it difficult to code the levels of injury that had been identified by the MDS workgroup. In addition, content experts recommended avoiding definitions of injury that would be heavily influenced by variations in practice patterns (such as CT ordered) and suggested relying instead on specific findings after a fall. We simplified the response categories for types of falls after admission based on our pilot test activities.

Methods for National Testing of Balance and Falls items

Data collectors were trained on the balance items by viewing and rating a videotape of gait and transfers. For falls items, they were provided with clinical scenarios to rate. As with all other items in the national test, MDS 3.0 and MDS 2.0 items shared the same assessment reference date. National study protocols are described in overall methods.

Methods for obtaining gold-standard nurse to gold-standard nurse and gold-standard nurse to nursing-facility nurse agreement are those described for the entire sample in the methods chapter.

Chapter 9: Gait and Falls Items

Nurses who participated in the MDS national study anonymously completed a feedback survey at the end of the national study. The structured questionnaire used Likert scale responses to obtain feedback on the balance and falls items and also provided space for written comments.

Results of MDS 3.0 National Testing

Staff Feedback on Balance and Falls Items Was Positive

Balance

- 88% said that the definitions for balance items were clear
- 83% felt that the balance items would help identify residents at risk for falls
- 87% felt that having 5 balance items made the section easier to score (4% disagreed) than MDS 2.0's two categories

Falls

- 83% felt that including all fall fractures in the preadmission item improved risk assessment
- 88% said that the fall-related injury definitions were clear
- 94% felt that facility falls documentation should include the information needed to complete the section

Agreement Between MDS 3.0 Assessors Was Excellent

For the balance items, the average gold-standard to gold-standard kappa was 0.945 and the gold-standard to facility-nurse kappa was 0.93. For falls, the average gold-standard to gold-standard kappa was 0.967 and the gold-standard to facility-nurse kappa was 0.945.

Crosswalk sample

The distribution of responses to the balance items demonstrates some variation in the percent of residents who were not steady and required human assistance to balance across the activities.

Chapter 9: Gait and Falls Items

Figure 9.1 – Balance During Transitions and Walking

Figure 9.1 – Balance During Transitions and Walking
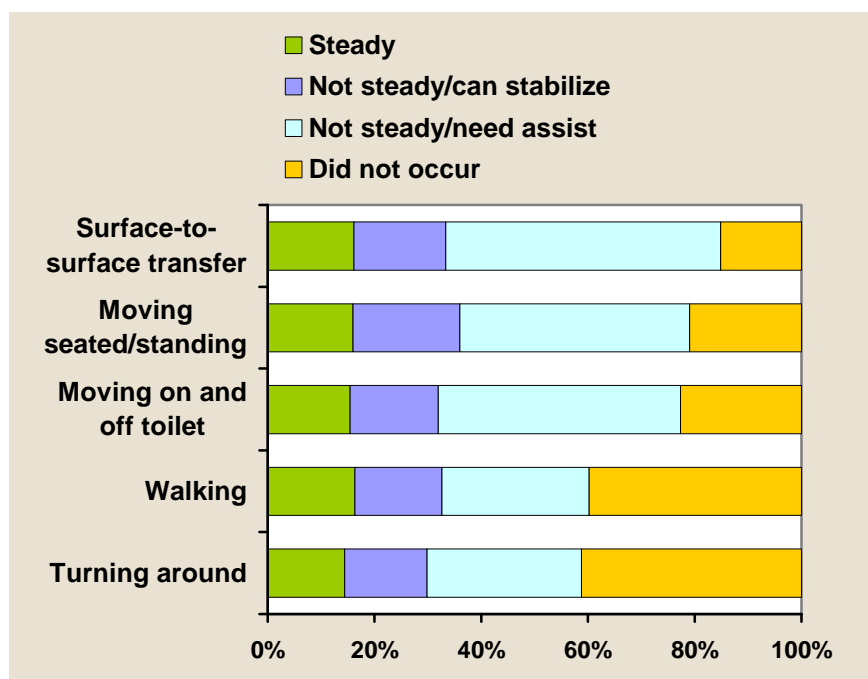
Are the balance items useful? Do all need to be evaluated?

Physical therapists and fall prevention experts tell us that it is important to observe each activity to fully assess balance. In addition, identifying each activity avoids confusion with coding and helps the facility in targeting fall prevention by identifying specific activities requiring human assistance.

The importance of this assessment for predicting falls is reason enough to include it in screening assessments for all NH residents. However, if ADL assistance items are perfectly correlated with balance, then it might be argued that both need not be included. Table 9.1 shows that although balance and ADLs are clearly related, they are not perfectly correlated.

Table 9.1 - Pearson Correlation Coefficients Among Balance Items and ADLs

	ADL Transfer	ADL toilet transfer	ADL walk in room	ADL walk in facility
Sit to stand	.68	.72	.74	.69
Walking	.65	.66	.84	.79
Turn around	.65	.66	.82	.78
Toilet trans	.67	.75	.71	.65
Surface trans	.63	.65	.65	.59

Chapter 9: Gait and Falls Items

Figure 9.2 shows the distribution of the admission falls items in the crosswalk analytic sample. A significant percent of residents undergoing admission assessment had a history of falling in the 30 days prior to admission to the NH.

Figure 9.2 – MDS 3.0 Falls: Admission Assessment
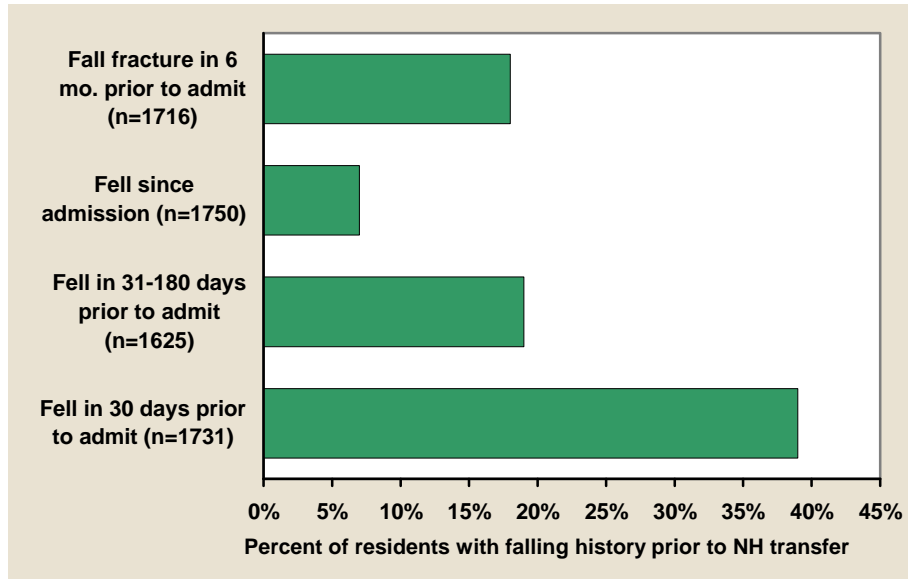
Of the 1,463 non-admission assessments, 24% (n=356) answered yes to any falls item. Figure 9.3 shows the outcomes of those falls (note: percentages do not total to 100% because each resident may have more than 1 fall type).

Figure 9.3 – 3.0 Count of Fall Types, Among 356 People Who Fell Since Last Assessment
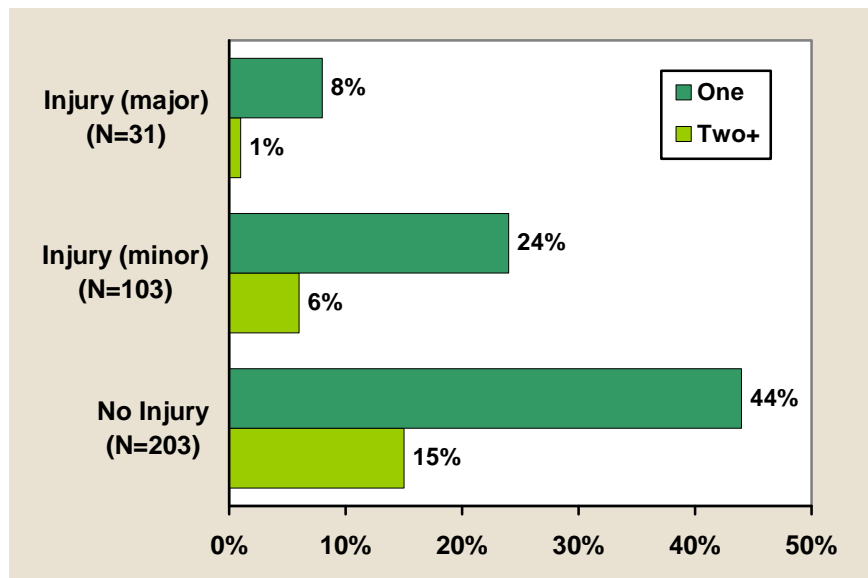
Chapter 9: Gait and Falls Items

Summary

Improved *balance* items assess balance during transitions and walking, activities associated with increased risk for falling. New *fall* items obtain different information for admission assessments than for follow-up assessments. The admission assessment focuses on pre-admission fall history and fall-related fracture. Follow-up fall assessments obtain information on numbers and outcomes of falls. Both the revised balance and falls sections had high reliability and were preferred over the MDS 2.0 items by staff who used both the MDS 2.0 and MDS 3.0 to assess residents.

Rationale, Item Development, Results of National Test

MDS 2.0 asks NH staff to answer 2 overall pain items addressing frequency and intensity and then to note whether pain is present in any of 10 possible pain sites.

Rationale for Testing Change to Pain Items

Pain is among the most common physical symptoms found in NH populations. Research indicates that 40-85% of NH residents have persistent pain.[141-144] Failure to identify the presence of pain or to assess its severity and functional impact can leave a potentially treatable symptom unrecognized and therefore unlikely to be addressed. Indeed, evidence suggests that pain is consistently under-treated, particularly among individuals with cognitive impairment.[143,145,146] There are clear gaps in nursing staff's knowledge of "best practice" pain management in hospitals[147] and NHs.[144,148-150] In addition, pain management practices vary widely across NHs.[150,151]

There is clear evidence that the MDS 2.0 does not support good pain assessment and management. At the facility level, studies using the MDS to estimate pain prevalence in NHs yield consistently, sometimes dramatically lower rates than research using self-report measures.[146,152] This same discrepancy is seen in studies that directly compare MDS 2.0 data with residents' self-reports of pain.[17,18,153]

This discrepancy underscores two issues. As a group, persons with cognitive impairment (CI) tend to voice fewer specific pain complaints than do cognitively intact persons.[142,154,155] In addition, it reflects a general tendency of clinicians to underestimate pain among older individuals not only in NHs,[17,18,156] but also in other health care settings.[157-161]

Patient self-report of the presence and severity of pain is considered the most reliable and accurate approach to pain assessment.[162,163] A small but growing literature demonstrates that even NH residents with moderate to severe CI can reliably respond to questions about pain.[142,153,154,164-166] However, several studies in elders with varying cognitive status[164,166-170] suggest that some tools may be more reliable and "user-friendly" than others for obtaining self-reports of pain from this population.

Pain Item Development, Summary

The VAHSR&D pilot work showed that direct resident interview about pain symptoms is feasible, even in residents with moderately severe cognitive impairment (CI), a finding consistent with multiple prior studies in NH settings.[142,153,154,164-166] Residents at all levels of CI provided answers to questions about pain presence, frequency, and severity. In VHA testing, repeated surveys of residents with different levels of CI found that residents were able to report whether they had experienced pain in the preceding 5 days. Although a small number of residents failed to report that pain had occurred during the 5-day look-back when they had reported pain on prior days, none of these residents had pain for more than 2 days during the look-back period. Residents' report of how pain affected

Chapter 10: Pain Items

their daily functioning supplemented the information available from severity ratings, particularly for residents reporting moderate or severe pain.[171]

During the item development period, CMS as well as stakeholders expressed a desire to test an item that considered residents' satisfaction with their current levels of pain treatment. We included an item that had been developed for a research study to assess residents' desire for pain elimination. In our validation sample, we also tested an item that asks whether the doctor or staff could do more to treat pain. The item was adapted from the Core Outcome and Comprehensive Assessment – Basic (COCOA-B) Data Set for PACE evaluations.

To define the pain therapies items, we worked with a group of content experts in pain and palliative care to develop operational definitions of PRN, scheduled and non-medication interventions that would accommodate current treatments and forthcoming advances in therapeutics.

Methods for National Testing of Pain Items

We included self-report of pain, pain frequency, the effect of pain on function and pain severity in the national field test. As in other interview sections, assessors were asked to approach all residents capable of communication and attempt the interview. At the request of CMS, we also tested items to describe type of pain regimen and desire for pain control. In a subsample of residents (validation sample), we tested temporal reliability of pain report (different nurses asking at different time points), a scale that combined verbal and 0-10 severity by one nurse compared to separate severity measures by a different nurse, and an alternative item for satisfaction. We also tested two alternative severity scales--the verbal descriptor scale (mild, moderate, severe, very severe/horrible) and 0-10 severity -- as separate items, but asked at different places in the same interview.

The staff observations of pain behavior were collected only for those residents who could not communicate about their pain. Observation items proposed for the MDS 3.0 are similar to a number of newly-developed scales for estimating pain in non-communicative NH residents.[172-174] The items aim to improve the sensitivity and specificity of provider observations by identifying specific pain behaviors.

Methods for obtaining gold-standard nurse to gold-standard nurse and gold-standard nurse to facility-nurse agreement are those described for the entire sample in the methods chapter.

Nurses who participated in the MDS national study anonymously completed a feedback survey at the end of the national study. The structured questionnaire used Likert scale responses to obtain feedback on the pain assessment and also provided space for written comments.

Chapter 10: Pain Items

Results of MDS 3.0 National Testing of Pain Items

Staff Feedback Was Positive

- 88% rated the MDS 3.0 interview items as better than MDS 2.0 for capturing resident's pain
- 85% reported that the pain interview items provided new insights into at least one resident's pain
- 94% reported that the pain interview items could inform facility care plans
- 90% reported that all the residents who responded appeared to understand (3% disagreed)[viii]
- 84% felt that the additional response item on MDS 3.0 verbal descriptor pain scale improved accuracy over MDS 2.0 (6% disagreed)
- 91-97% rated the various pain management definitions as clear
- 72% felt that the pain treatment goals should remain on MDS 3.0 and not be moved to a pain RAP (12% disagreed)
- 85% concluded that the observational check list of pain behaviors will improve reporting of possible pain in non-communicative residents
- 94% felt that the instructions for staff observational assessment for pain were clear and helpful (0% disagreed)

Likely reflecting CMS national initiatives to increase pain assessment with standardized scales in NHs, most of the facilities in our sample reported that they routinely used pain severity scales to assess their residents. Eighty percent used the 0-10 scale and 25% reported using other pain scales.[ix] Only 7 facilities in the national sample did not use any pain scale. Given the extent of reported prior use of standardized scales, it is notable that the majority of nurses preferred the MDS 3.0. We do not know if a facility routinely used the scale for all residents or only for those who were deemed to be cognitively intact. We also do not know the frequency with which pain was assessed or how facilities translated the scale they used into the MDS 2.0 assessment.

Agreement Between MDS 3.0 Assessors Was Excellent

For the pain treatment regimen items, the average kappa for gold-standard to gold-standard agreement was 0.968. The average kappa for gold-standard to facility-nurse agreement was 0.876. For the pain interview items, the average kappa for gold-standard to gold-standard agreement was 0.961 and for gold-standard to facility-nurse agreement was 0.967. For staff observed pain behaviors, average kappas were 0.936 and 0.956.

[viii] The remainder of respondents selected the neutral rating.
[ix] Respondents could indicate that they used more than one type of pain scale.

Chapter 10: Pain Items

Crosswalk Sample

Frequency of pain treatment items

Table 10.1 shows the distribution of responses to the pain treatment items. Because these items are check all that apply, some residents received more than 1 therapy. As expected, the most common received treatment is PRN medication.

Table 10.1 – Distribution of Responses to Pain Treatment Items

MDS 3.0 item (check all that apply)	Percent of 3258
Scheduled pain medication	31
PRN pain medication	44
Non medication intervention	16

Ability of Nursing Home Residents to Complete the Pain Interview Was High

87% of the sample completed the pain interview (9% were not approached; 3% of those approached were unable to complete the pain interview).

Of those who answered the pain presence item, 61% said they had pain. For the same sample, 52% were noted to have pain on MDS 2.0.

Among those reporting pain on MDS 3.0, responses to other pain items (frequency, pain made it hard to sleep, pain limited day-to-day activities, and the two severity scales) included the full range of available responses supporting the decision to include a range of responses and items.

Validation Sample

Ability of Nursing Home Residents to Complete the Pain Interview Was Also High in the Validation Sample

89% of the validation sample completed the pain interview.

MDS 3.0 Pain Presence in Validation Sample

64% of those approached for the MDS 3.0 pain interview reported pain or hurting in the past 5 days. Comparing blue to gold assessments, the temporal reliability for pain presence was excellent, with a kappa of .92 (.88, .96).

Some were concerned that older adults might be at risk for denying pain that staff would detect. However, for the sample that was approached for interview in MDS 3.0, the MDS 2.0 pain presence was significantly less than that obtained from self-report (J2a = 1 or 2):

187/377= 50%. This is consistent with several prior studies comparing pain observations to self-report.

Functional Effect of Pain - MDS 3.0 Validation Sample

In our validation sample, we asked 4 questions about how pain affected function (pain made it hard to sleep, pain limited day-to-day activities, pain made it hard to get of bed, pain made it hard to spend time with other people). We had narrowed the list to 2 items for national crosswalk testing by selecting the combination of two items that capture the greatest number endorsing any limitation in the pilot data. Our national validation analyses confirmed that the two items we selected for crosswalk testing (pain made it hard to sleep, pain limited day-to-day activities) captured the majority (87%) of the 176 residents who endorsed any effect of pain on functioning.

Pain Severity Scales

In the validation sample, we compared two of the most commonly used and accepted pain severity scales. Residents were asked to answer using the 0-10 severity scale, and then, later in the interview, they were asked to respond using a verbal descriptor scale (VDS) with response options "mild", "moderate", "severe", and "very severe/horrible." The assessor was instructed not to mention or refer to the resident's earlier severity score. Our intent was to compare responses for each of these items in the same sample. The distribution of these items is shown below.

0-10 Scale in Validation Sample
94% of those with pain answered the 0-10 scale. The following graph (Figure 10.1) illustrates that responses occurred across the entire scale.

Figure 10.1 – Distribution in Validation Sample (0-10 Scale)
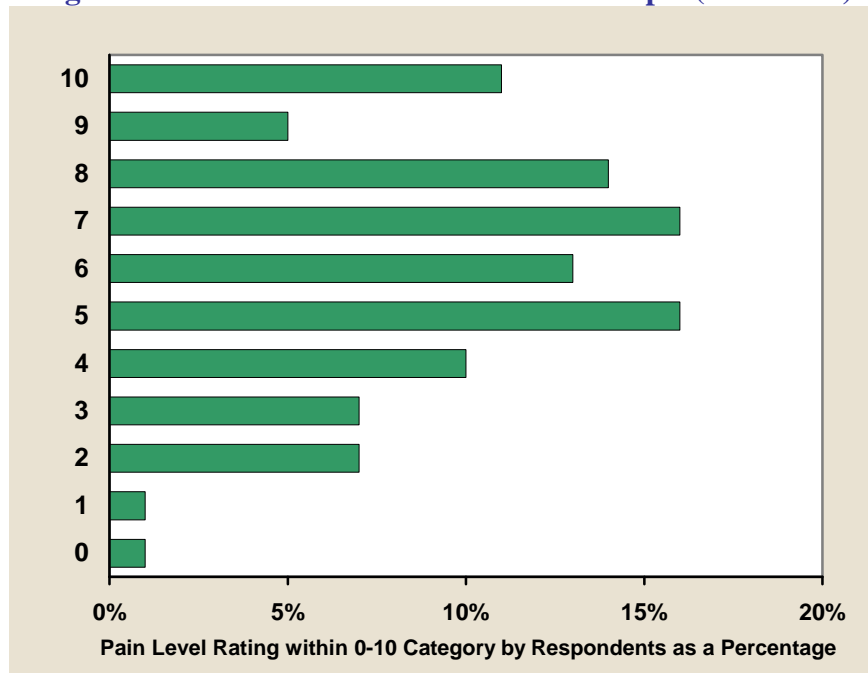
Chapter 10: Pain Items

Verbal Descriptor Scale Distribution in the Validation Sample

98% of those with pain were able to answer the Verbal Descriptor Scale (Figure 10.2).

Figure 10.2 – Distribution in Validation Sample (Verbal Descriptor Scale)

Pain Level Rating within VDS Category by Respondents as a Percentage
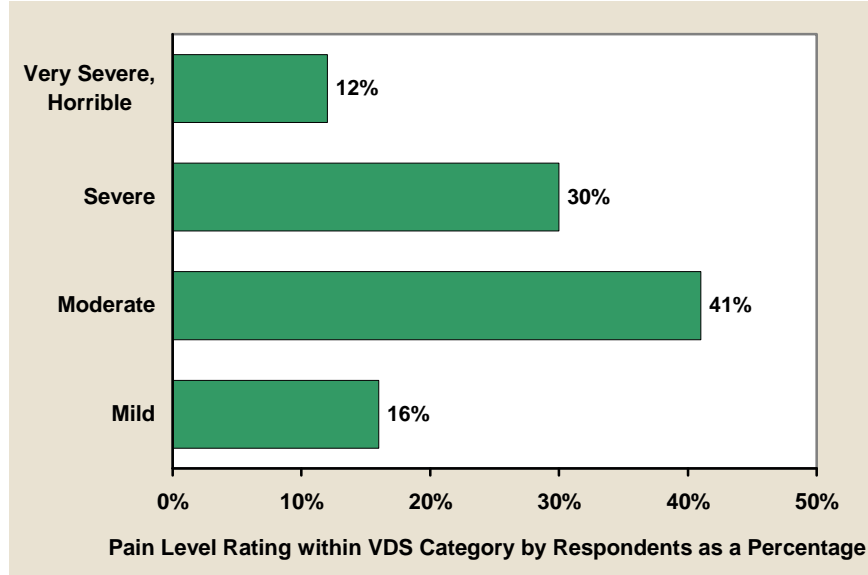
In the validation sample, most of the 238 residents who reported having pain provided answers to both severity scales. Thirteen (5%) were unable to answer the 0-10 scale while 3 (1%) were unable to answer the verbal descriptor scale. The majority of residents with cognitive impairment (CI) were able to answer both types of severity questions; however, in the cognitively impaired group, non-response was slightly more likely with the 0-10 scale than with the VDS.

- 76/89 (85%) with CI answered 0-10 scale
- 86/89 (96%) with CI answered VDS

In the crosswalk sample, we provided both severity scales next to each other on the form (the VDS appeared first). Assessors were instructed that if the resident had a prior history of using a particular scale or if the facility typically used a particular scale, to use that scale to ask about severity. If the resident was unable to answer the first scale tried, they were to try the alternative severity scale. Of 1726 with pain, 885 answered the verbal descriptor scale and 891 answered the 0-10 scale.

Mapping Pain Intensity 0-10 Response to Verbal Descriptor Scale

Because there are compelling reasons to retain both pain intensity response formats in the MDS assessment, we conducted Item Response Theory (IRT) analyses to map the two response formats. Data for the analyses included N=815 respondents who used the verbal descriptor scale (VDS) only, N=813 who responded using the numeric rating scale (NRS) only, and N=307 who responded with both scales. We used IRT to map the verbal

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descriptor scale to the numeric descriptor scale by estimating item parameters for these and five additional pain items included in the crosswalk and/or validation pain interview. Examination of the item location parameters from this calibration indicated the following approximate correspondence (Table 10.2):

Table 10.2 – Verbal Descriptor Scale

Verbal Descriptor Scale	Equivalent range in Numeric Rating Scale
Mild	0-4
Moderate	5-7
Severe	8-9
Very Severe, Horrible	10

This IRT calibration provides a crosswalk between the two response scales so that either can be used in practice depending on the preference of the clinician and respondent.

MDS 3.0 Pain Treatment Goals

As we described above in item development, the validation sample included two different items focused on the goals of pain treatment. One of the motivating factors for this item was the observation of clinicians and consumers that individuals vary in their preferences for selecting between pain medications/interventions and tolerating some level of pain. The first question was:

- *In your opinion, how important is it for your pain treatment to completely eliminate your pain?*

  Of those with pain, 91% responded to the question. The distribution of responses is shown in Table 10.3. Responses were clustered toward higher importance and did not show a wide distribution across the scale. This item did not appear to provide a useful metric for understanding those residents who desired more aggressive therapy for pain.

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Table 10.3 – Responses to Pain Elimination Question

Response	Percent (%)
Extremely important	38
Very important	41
Somewhat important	18
Not at all important	3

The second item focused on goals for pain treatment was:

- *Do you feel that your doctor and the nursing home staff should be doing more to keep you free from pain?*

This second item was included only in the validation sample and was collected only by gold-standard nurses. Of those with pain, 96% responded to this question. In this case, the responses were less heavily clustered, as shown in Table 10.4.

Table 10.4 – Responses to Pain Management Question

Response	Number (n)	Percent (%)
No	153	66
Yes, a little more	59	25
Yes, a lot more	20	9

After reviewing the wording and results of these items, our TEP preferred the second item but expressed concern that residents would be unwilling to report any dissatisfaction with their care directly to their care provider. They were, therefore, concerned that future responses might be biased. The TEP recommended using an item that avoided asking the resident to be critical of the care provider who was conducting the interview. They recommended that we test an item that asked "Do you feel that more should be done to keep you free from pain?" We conducted additional cognitive testing and found that even with the phrase "physician and staff" removed, residents were very hesitant to answer, often prefacing their ratings with comments like "I don't want to say anything bad about the staff…" We also found discordance between selected response and narrative, frequently consistent with accommodation to current regimen.

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MDS 3.0 Staff Pain Assessment

For those residents who were unable to communicate or who could not complete the pain interview, we used existing observational tools to create a staff check list for pain-related behaviors. In the validation sample, this was 45 residents and in the crosswalk sample it was 378.

The prevalence of at least one observed pain behaviors was similar in the validation sample and the crosswalk sample--40% and 44% respectively. In MDS 2.0, 29% had pain noted. Figure 10.3 shows the distribution of observed behaviors in the MDS 3.0 crosswalk sample.

Figure 10.3 – Distribution of Observed Behaviors in Staff Assessment of Pain
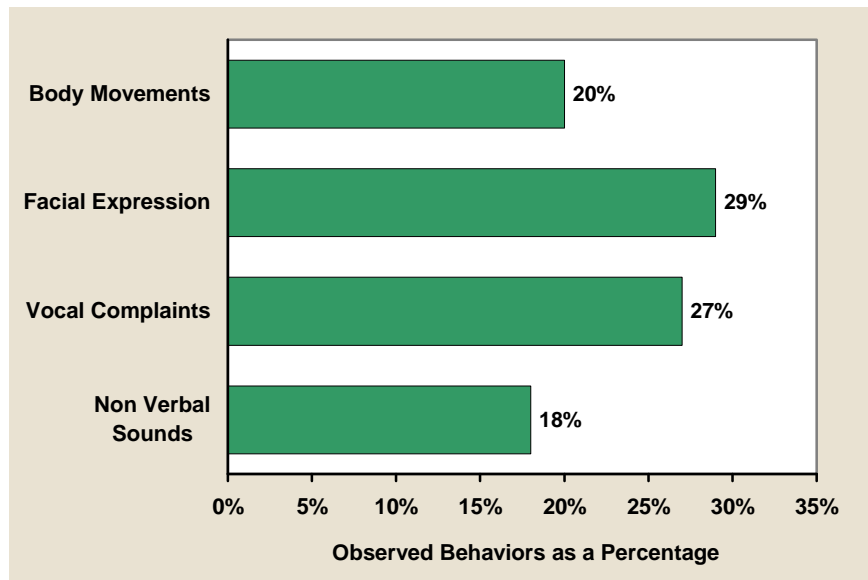
Summary

An updated *pain section* includes items about *pain treatment regimens* based on chart review. A direct-interview *pain assessment* uses resident self-report to obtain pain information, aligning pain assessment with the accepted care standard across settings. Measured reliability and staff reported utility for the revised pain section were high. Items asking about the *effect of pain on sleep* and *day-to-day activities* are drawn from the Geriatric Pain Assessment.[175] The pain severity items include the *0-10 scale*, a recognized scale that is used in other settings, and the *verbal descriptor scale*, which may be easier to answer for some residents with cognitive impairment. Our analyses of the national data set used item response theory (IRT) methods to create a crosswalk that will allow CMS programs to reconcile the verbal descriptor scale and 0-10 scale, thus giving facilities a choice of these scales.

For those residents who cannot make themselves understood or who cannot complete the pain interview, MDS 3.0 includes a list of *observable pain behaviors* to improve reliability of assessments and detection of possible pain. We recommend that the pain treatment items be collected on all residents and that the pain interview items be collected

on all residents capable of communication. The staff observation of pain behaviors should be collected on residents unable to complete the pain interviews.

In addition to the changes and testing noted for cognition, depression, behavior, customary routine, activities, falls, balance, and pain discussed in Chapters 5-10, we made other revisions and updates to the MDS. In this chapter, we discuss changes that applied across multiple sections of the form. We also describe 8 other sections that underwent notable content revisions. We made these revisions to address long-standing challenges with the MDS 2.0 items, to include up-to-date assessment science and methods, to incorporate proven items used in other settings, and to improve clarity and clinical utility.

➢ Look-back Periods

Reasons for Testing Change to Look-back Periods

During Phase 1 activities, look-back periods were highlighted as a significant issue across the assessment tool. The issues surrounding look-back periods varied by the type of item. For clinical assessment items, longer look-back periods served to increase the amount of record review, increasing assessment burden and leading to more opportunities for error.

The MDS 3.0 validation panel identified the most valid interval for NH staff and residents to accurately look-back to identify an active sign or symptom for care planning. For clinical items the most common valid interval was 5 days. The exception was depression because depression diagnosis depends on symptom persistence for longer intervals. As a separate issue, some groups recommended more focused look-back periods for treatments and limiting treatments considered in casemix to those actually received in the NH. We therefore tried an approach that collected treatments for a 5-day look-back. If the particular assessment was a 5-day assessment, the field trial form also asked the data collector to separately report treatments received in the 5 days prior to admission.

National Testing of Look-back Periods: Results

The 5-day look-back period for clinical items performed well and likely contributed to the improved reliability of several items with otherwise minor changes and to decreased data collection burden overall. Crosswalk analyses showed that these revised clinical items could be mapped to existing payment cells without substantial changes in payment. Change in look-back for therapies, however, did not crosswalk readily into payment cells, perhaps reflecting a variation in therapies received over weekends (Clinical characteristics, on the other hand, would not be expected to vary over weekends). We also were unable to readily crosswalk a change in look-back for the treatment items. Our recommended draft therefore uses the old MDS 2.0 look-back for treatments pending consideration in an ongoing payment recalibration by CMS (see chapter 12 for more detail about RUGs analyses).

Staff Feedback on Look-back Was Positive

- 77% of staff felt that limiting the look-back period to 5 days (or since admission) made the form easier to complete (12% disagreed)

Chapter 11: Other Notable MDS Advances

Elimination of Items with a History of Inadequate or Invalid Performance

Several individual items in MDS 2.0 have not performed as expected. The reasons are varied. One common reason is that some items were included on multi-item check lists without sufficient development on the form of the item's assessment elements or standardized protocols for evaluation. For some items, the cross-sectional approach to MDS assessment was not matched to reporting an incident event. If an item had a history of inadequate or invalid performance as collected in MDS and was either not needed for program function or could not be replaced by an equivalent valid item within the overall structure of MDS, we eliminated the item from national testing. We did retain some checklists in skin treatments and other payment items.

➢ Section G.1 – Activities of Daily Living (ADLs)

Reasons for Testing Changes to ADLs

The ADL items in the MDS 2.0 have been identified as among the most problematic for inaccurate coding by the Data Assessment and Verification (DAVE) Project. They have also been highlighted as an important error source by the Government Accounting Office.

One area of difficulty has been the need for more differentiated items that reflect accepted approaches to ADL assessment by related disciplines. Staff members have had difficulty coding the dressing item that combined upper body and lower body tasks, an approach that is inconsistent with items used by therapists or used for care planning. Similarly, a combined "toilet use" item was inconsistent with more accepted therapy scales and task breakdown needed for care planning.

An additional source of error in ADL assessments was the use of "average" to code self performance but use of "most dependent" to code staff support. In particular, the definition of average led to confusion and was a source of inaccuracies during audits.

MDS 3.0 Changes to ADLs

- G1. Activities of Daily Living (ADL) Assistance
  - Response categories combine performance and support into single scale
  - Coding based on most dependent episode
    - Supervision, as distinguished from set up, requires that oversight, encouragement, or cueing be provided throughout the activity
    - For a task to be coded as fully dependent, the resident had to be unable or unwilling to perform any part of it
  - Toilet transfer was separated from toilet use
  - Dressing upper body was separated from dressing lower body

Chapter 11: Other Notable MDS Advances

Results of MDS 3.0 National Testing of ADLs

Staff Feedback on Revised ADLs Was Positive

- 88% rated the MDS 3.0 ADL items as easier to complete accurately (3% disagreed)
- 91% felt that the MDS 3.0 instruction to rate "most dependent" episode on ADL items made scoring easier (3% disagreed)
- 97% rated the MDS 3.0 ADL single response column as easier to score than the 2 columns in MDS 2.0 (3% disagreed)
- 90% rated the MDS 3.0 separation of toilet transfer from toilet hygiene as an improvement (3% disagreed)
- 74% agreed that the term "walk in facility" is more useful for care planning than "walk in corridor" (4% disagreed)
- 96% felt that it was an improvement to rate upper body dressing and lower body dressing as separate items (1% disagreed)
- 79% rated the MDS 3.0 eating item as clearer (4% disagreed)
- 86% noted that they preferred the MDS 3.0 inclusion of bathing in ADL list to the MDS 2.0 approach of having a different question (3% disagreed)
- 84% felt that the instructions for the ADL items were clear (3% disagreed)

Agreement between Assessors Was Excellent

The average kappa for gold-standard to gold-standard comparison for the ADL section was .977 and average kappa for gold-standard to facility-nurse comparison was .956.

➢ Section H – Continence

Reasons for Testing Changes to Continence

The MDS 2.0 continence section suffered from the following limitations:

- Residents with catheters were incorrectly coded as "continent"
- Raters found the continence category of "usual" confusing
- The program section failed to identify those who had a trial toileting program, did not respond, and therefore were appropriately not on a current program
- Consistent problems have occurred with inappropriate selection of toileting program when care did not meet that definition. Independent studies have documented that toileting program is often marked present when the only nursing activity is scheduled AM hygiene and changing continence briefs.
- The validation panel rated the MDS 2.0 fecal impaction item not valid for measuring the real incidence of impaction. Therefore, auditing of facilities based on MDS reports was very likely to miss important sentinel events. These validity problems related to attempting to measure an incident event in a cross-sectional tool and to lack of consistent identification for a sentinel event. There was no evidence that having the item as a check-off on the MDS 2.0 form improved either surveillance for the condition or prevention.

Chapter 11: Other Notable MDS Advances

MDS 3.0 Changes to Continence

- Catheter & ostomy were moved from "always continent" to "not rated" (new response)
- Urinary continence frequency ratings eliminated one level, simplifying response categories
- Items for toileting trial and toileting program were separated
- A new item for toileting trial since admission or since new onset of incontinence includes definition in order to help clarify for NH staff members
- A new item reports response to toileting trial or program
- A separate item asks whether a toileting program is currently in place
- Eliminated fecal impaction item
- Constipation changed to yes/no item instead of check-off. Content experts felt it important to draw attention to the item because it is a common side effect of medications and immobility and is a detectable manifestation of possible dehydration. Recognition and management of constipation are likely to decrease the risk of impaction.

Results of MDS 3.0 National Testing of Continence

Staff Feedback on Revised Continence Items Was Positive

- 81% of staff rated revised response categories clearer and easier to code (7% disagreed)
- 90% rated "not apply" response as useful for coding urinary catheters
- 83% rated new incontinence management item as improving assessment and reporting (4% disagreed)

Agreement Between MDS 3.0 Assessors on Continence Items was Excellent

Average kappa for gold-standard to gold-standard was .949; the gold-standard to facility-nurse kappa for the section was .945.

Crosswalk Sample on Toileting Program

Twenty percent of the 3,258 residents in the sample were noted as having had a trial toileting program. Of these, 44% had no improvement; 35% had decreased wetness; 8% were completely dry; 19% were unable to determine response. Of those who reported a toileting trial, 71% were reported to still be on a toileting program (14% of the total sample). We would expect to see an evolution in these patterns as MDS 3.0 prompts facilities about basing a toileting program on a systematic trial that charts resident response to the trial.

➢ Section I – Diagnoses

Reasons for Testing Changes to Diagnoses Section

Although MDS diagnostic data are extensively used, concerns persist regarding the data. The Data Accuracy and Verification (DAVE) project identified this as one of the more common sections with coding discrepancies. It is often unclear whether diagnoses are

removed when conditions resolve. The data may also not be sufficiently detailed to provide accurate descriptions of clinical status, and some important comorbidities are absent. If an item requires physician documentation, then a 7 day look-back period was difficult, because physician visits and documentation occurs less frequently in NH settings. In addition, assessors have felt challenged in operationalizing the qualifier "active". Although diagnoses could be identified by name, determining whether they met the MDS requirement of active ("having a relationship the resident's current ADL status, cognitive status, mood or behavior status, medical treatments, nursing monitoring or risk of death") presented training and standardization challenges. This later challenge also proved to be a barrier to efforts to apply electronic abstraction based on systematized nomenclature to MDS.

MDS 3.0 Changes to Diagnoses Section

- Major change to instructions for determining if disease is active
- Developed more detailed algorithms for each diagnosis to facilitate determination of whether a condition was active and to enhance reliability across assessors
- Look-back window for physician notes at 60 days based on lesser frequency of physician notes; 30 days for signs of active condition
- Several diagnostic labels were updated. More synonyms, abbreviations, and associated diagnoses were included in parentheticals to improve reliability and decrease use of "other" category
- We tested including "other" in each diagnostic group in order to create certain prognostic scales that rely on organ symptom groupings and to test if including an "other" category decreased the number of nonsense codes entered

Results of MDS 3.0 National Testing of Diagnoses Section

Staff Feedback on Diagnoses Section was Positive

- 83% felt new structure improved the usability of the items
- 77% preferred a check box over ICD-9 coding (6% disagreed)
- 87% felt that the new instructions to help define "active" were useful and clear (4% disagreed)

Agreement Between MDS 3.0 Assessors on Diagnoses Was Mixed

For items on the form, reliability was either very good or excellent, indicating some gains from algorithms and revised diagnostic labels

The addition of "other" under each organ system or condition group was less effective. Review revealed that the diagnoses that were written in were often not grouped with the appropriate system or group on the form and that coders had moderate or poor agreement on these items.[x]

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[x] Final recommended form does not include "other" category by system. The form uses the MDS 2.0 format of having other diagnoses listed at the end.

Chapter 11: Other Notable MDS Advances

➢ Section K – Swallowing/Nutritional Status

Reasons for Testing Changes to Swallowing and Nutritional Status

Some nurse assessors expressed confusion about the intent of the MDS 2.0 swallowing item. Most questions centered on whether the swallowing item was focused on current signs or symptoms or intended as a reported diagnosis. Swallowing problems that might be addressed with therapy or with dietary modification were not consistently detected. Content experts felt that highlighting observable signs and symptoms would improve detection.

As the number of bariatric residents has increased, facilities wanted a mechanism to identify when weight loss was a result of an intentional weight loss program.

Assessors have had some difficulty with distinguishing some of the categories in nutritional approaches.

MDS 3.0 Changes to Swallowing and Nutritional Status

- Changes from 2.0
    - o K1a-e. Swallowing Disorder is revised to a list of observable signs and symptoms of swallowing disorder to improve problem identification
    - o MDS 3.0 moved related residual item from dental
    - o Weight loss response was expanded to include: 1) yes, on physician prescribed weight loss regimen; and 2) Yes, not on physician prescribed weight-loss regimen[xi]
    - o Labels on form for feeding tube, mechanically altered diets, and therapeutic diet were expanded to include information currently in instruction manual
    - o Categories for calories through parenteral or tube feed and for average fluid intake were simplified to retain those needed for payment

Results of MDS 3.0 National Testing

Staff Feedback on Swallowing & Nutritional Status Was Positive

- 93% felt that new swallowing checklist would improve assessment
- 96% felt that it clarifies signs and symptoms of a swallowing disorder
- 93% agreed that the instructions for these items were clear and helpful (0% disagreed)

Agreement Between MDS 3.0 Assessors was Excellent

Average kappa for gold-standard to gold-standard assessments for the swallowing items was .989; average kappa for gold-standard to facility-nurse identification of signs/symptoms of swallowing disorder was .983.

[xi] Response category labels modified after trial to avoid coding of anticipated weight loss within planned weight loss

Chapter 11: Other Notable MDS Advances

For nutritional status, average kappa for gold-standard to gold-standard assessments was .933; average kappa for gold-standard to facility-nurse assessments was .926. Figure 11.1 demonstrates the distribution of responses to the swallowing items. Fifteen percent of the national sample had at least one of these items checked.

Figure 11.1 – Distribution of Responses to Swallowing Items
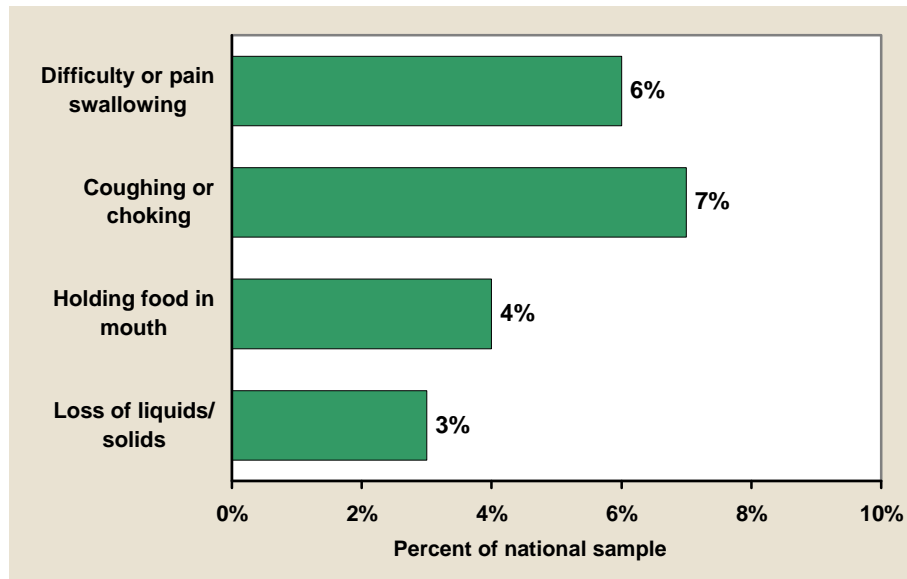
➤ L - Oral/Dental Status

Reasons for Testing Changes to Oral Items

New items were developed and tested at the urging of the Special Care Dentistry Association and the American Dental Association (ADA). They argued:

- It is important for MDS to emphasize examination of oral cavity
- MDS 2.0 items not reflect correct pathology groupings
- The old MDS 2.0 section was limited in its ability to identify prevalent and important oral conditions

MDS 3.0 Changes to Oral Items

We worked iteratively with ADA representatives to develop an item that would be clear to NH staff members, who are likely to vary in levels of training around oral health. The new MDS 3.0 section includes six possible groups of findings from staff examination of the oral cavity. It also includes a response option for "none of the above" and a response option that allows assessors to indicate that they were unable to examine the oral cavity.

Chapter 11: Other Notable MDS Advances

Results of MDS 3.0 National Testing of Oral Items

Staff Feedback on Oral Items Was Positive

- 79% rated new dental items as clear and distinguishable
- 84% felt that the new oral/dental status items would improve care plan
- 84% felt that the instructions for this section were useful and clear (3% disagreed)

Agreement Between MDS 3.0 Assessors on Oral Assessment Was Excellent

Average kappa between gold-standard to gold-standard nurses for MDS 3.0 Oral/Dental Status reliability was .951. Average kappa for the section comparing gold-standard to facility-nurse was 0.89.

➢ Section M – Skin Changes

Reasons for Testing Change to Skin Changes

- MDS 2.0 items for pressure ulcer (PU) were problematic per wound care experts because:
  - Used reverse staging, which does not reflect the pathophysiology of PU healing
  - Failed to capture size or change in size, therefore missed improvements
  - Inappropriately "staged" stasis ulcers
  - Failed to document PUs that were present on admission
  - Did not allow for category "unstageable"
- Did not report diabetic foot ulcer
- Because MDS 2.0 items do not match best practices, many high performing NHs were "double charting"
  - One approach for MDS 2.0 vs. "correct approach" with deepest anatomical stage and measurement for care
- Wound care experts are urging facilities to at least attend to dimensions and appearance of pressure ulcers

MDS 3.0 Changes

GOAL: align MDS 3.0 with accepted best practices
- Eliminates reverse staging for Pressure Ulcers (PU)
- Pressure Ulcer staging based on deepest anatomical change (recommendation Wound, Ostomy, and Continence Nurses Society (WOCN), National Pressure Ulcer Advisory Panel (NPUAP))
- Unstageable PUs are assessed as separate items (NPUAP, WOCN)
- The number of PU that were present on admission is collected for each stage
- New Pressure Ulcer Scale for Healing (PUSH) items
  - Tissue type for most advanced stage
  - Report length (head to toe) and width of largest PU at each stage for 2-4

- o We tested using exudate amount for most advanced stage, but we later eliminated this item based on recommendation from NPUAP and other content experts
- 'Present on admission' coded for stages 2 through unstageable
- NPUAP definitions were included on the form to enhance reliability
- New items added to facilitate assessment of each stage:
    - o # healed
    - o # worsened
- Venous/arterial ulcers separated from diabetic foot ulcers (per NPUAP, WOCN)
- No longer stage stasis ulcers
- Only the look-back was changed for the treatment items used for payment

Results of MDS 3.0 National Testing

Staff Feedback on Updated Pressure Ulcer Section Was Positive

- Staff perceived updated section as an important advance:
    - o deepest anatomical staging (82%)
    - o present on admission (99%)
- 97% felt that facilities should document dimensions on all stage 2, 3 & 4 PUs
- 87 % agreed that it is clinically useful to have a "not stageable" category (3% disagreed)
- 89% felt that definitions were clear (3% disagreed)
- 93% agreed that including stage 1 PU on form would improve consistency (1% disagreed)
- 83% felt that the form was easy to use for reporting PUs at different stages (7% disagreed)
- 91-93% felt that the instructions for other ulcers were clear and useful (3% disagreed)
- Only 32% felt that the form should be further modified to record single largest PU instead of largest at each stage

Agreement Between MDS 3.0 Assessors Was Very Good to Excellent

For the updated pressure ulcers items (M1-M11d), average gold-standard to gold-standard kappa was .905. Average gold-standard to facility-nurse kappa was .937.

For the skin treatment items (13a-i),[xii] the average gold-standard to gold-standard kappa was .839. Average gold-standard to facility-nurse kappa was .80.

After Completion of MDS 3.0 National Testing

Close to the completion of the national test, NPUAP released new definitions for pressure ulcers. Several changes serve to clarify definitions and reduce confusion among raters but do not alter the fundamental items.

[xii] Kappas do not include applications of dressings to the feet. We did not include this item in the national trial, but we reinserted it in the final form of MDS 3.0 at the request of CMM.

Chapter 11: Other Notable MDS Advances

Two changes were more significant. First, the definition of type I pressure ulcer reduced the explanation of how to identify type I PUs in dark skin types. Second, a new category of Deep Tissue Injury was added. In subsequent conversations with NPUAP, we received a few additional comments. These included a recommendation to delete volume of tissue exudate and a request to change "pressure reducing device" under skin treatments to "pressure redistributing device." They were also concerned about the lack of specificity of several of the skin treatment items and their relevance to skin care.

In discussions with NPUAP, we agreed to the following:

1. Change the labels for Stage1-4 to updated NPUAP labels for clarity
2. Re-insert language about dark skin tones for stage I
3. Include DTI under unstageable group; include definition of DTI in instructions.
   We will not recommend including DTI as a separate category because we are unable to provide crosswalk or reliability data. This is an evolving topic, and the ability of facility nurses to reliably identify has not been determined. As evidence evolves, this item can be considered for future tools.
4. Delete exudate amount
5. Add "(resurfaced with epithelium)" to healed item
6. Because "pressure reducing" is a payment item and we are unable at this juncture to provide a crosswalk from the changed language to the MDS 2.0 item, we did not recommend changing this item.
7. Likewise, we retained the treatment items in their format as payment items because we cannot crosswalk from the changed language to the MDS 2.0 item.

➢ Section P: Restraints

Reasons for Testing Changes to Restraint Items

Despite considerable efforts to educate NH staff about the definition of restraints, there continues to be some confusion in some facilities about the definition.

MDS 3.0 Changes to Restraint Items

- Definition of restraints was added directly to form
- At the suggestion of content experts, we separated restraints used in bed and out of bed to facilitate coding
- An "other restraint" response code was added

Staff Feedback Was Strongly Positive

- 91% felt that dividing restraints into bed and chair made coding clearer and easier
- 96% agreed that the instructions for this section were helpful and clear (0% disagreed)

Agreement Between MDS 3.0 Assessors Was Very Good to Excellent

Some of the restraint types were present in only a very small number of residents in this

sample. Gold-standard to gold-standard kappas ranged from .857 to .934 and gold-standard to facility-nurse kappas ranged from .66 to .873.

Analyses in this section showed that within nurse pairs there was some disagreement in rating the two different types of bed rails: full vs. partial. In discussions with CMS, we determined that the distinction was not needed for monitoring. Since the distinction was a source for error, we agreed to combine the categories in the recommended MDS 3.0 form.

➢ Section Q – Goals of Care & Preference to Return to Community

Reasons for Testing Changes to Goals for Stay and Desire for Community Discharge

Goal setting may be particularly important in improving the collaborative management of chronic illness and conditions.[176] Preferences for outcomes or goals of care can be obtained from persons with dementia[177] and from NH residents.[25,26] Both the validation panel and initial TEP voiced strong beliefs that MDS should include an item that initiated discussion about goals for stay. They preferred this to an item documenting advance directives and surrogates in MDS.

Consumers, clinicians, and providers on both panels felt that an emphasis on legal directives in the MDS was not useful, and that the tool failed to generate the goals of care discussions that are more fundamental to recognizing and honoring resident care preferences across the continuum of NH care. Advance directives have been plagued by inconsistencies between the MDS and the medical record that includes physician orders (the primary source for documenting active advance directives). At the time of transfers or acute decision making, non-MDS sources are more reliable and CMS does not require the MDS items for program function. There is no evidence to show that the MDS, as a secondary documentation source, has increased completion of advance directives or improved related care planning. Stakeholders felt that emphasis would be better focused on an item that asked about the resident's goals of care for their stay and that required direct conversations with the resident or family.

In addition, CMS requested that MDS 3.0 include an item exploring the resident's desire to talk to someone about returning to the community. Identifying and supporting residents who want to return to the community is a high priority for CMS and state agencies. We were asked to test a direct interview item that asked "would you like to speak with someone about the possibility of returning to the community?" We also considered an item giving permission to share the individual's name with a community agency. For the return to community item, pilot testing in community and VA facilities showed that a follow-up item about referral was difficult to ask in a research design where assessors were not planning to make an actual referral. Assessors thought it might be misleading and were uncomfortable with implying that a referral was being made when it would not be.

Chapter 11: Other Notable MDS Advances

MDS 3.0 Changes to Goals for Stay and Desire for Community Discharge

A Goals of Care item was placed at the end of the MDS assessment under the assumption that assessment of goals of care might best occur after a full assessment of resident conditions, abilities, and support needs. The goals question focused on goals for the remainder of a NH resident's stay, selecting from 8 goals and including an unknown or uncertain response as a final answer. In post-trial discussions with CMS, we moved the item on desires to speak with someone about Return to the Community to this section.

Results of MDS 3.0 National Testing

Staff Feedback Was Mixed

- Feedback on the Goals of Care item was positive
  - o 86% felt that the question was helpful in clarifying expectations
  - o 88% reported that the question opened up helpful discussion about care planning
- Response to the Return to Community item was mixed
  - o 65% reported that most residents appreciated being asked if they wanted to speak with someone; however, 36% reported that the item was upsetting to several residents

Agreement Between MDS 3.0 Assessors Was Excellent

Agreement was excellent for the items addressing goals for stay and return to community for both gold-standard to gold-standard and for gold-standard to facility-nurse comparisons.

Distribution of Responses to Goals for Stay and Return to Community Items

All admission assessments included the item asking for goals established during the assessment process. Figure 11.2 illustrates that all available response options were selected by at least some residents, with "post acute care--expects to return to community" as the largest group, followed by "long term care for medical, functional, and/or cognitive impairments." The least endorsed response, as would be expected, was respite care.

Figure 11.2 - Goals Established During Assessment Process
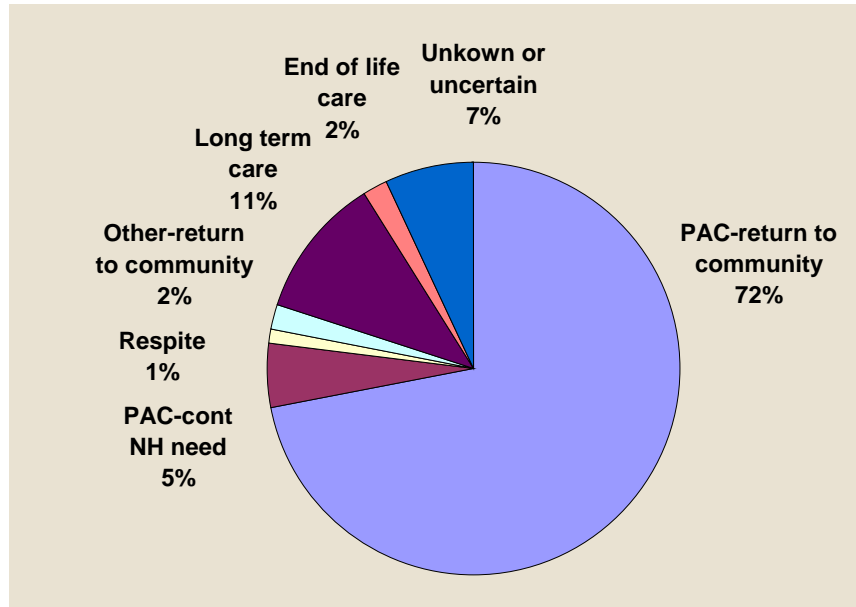
Want to talk to someone about the possibility of returning to the community?
Likewise, we saw that newly admitted residents as a group used both of the response options. The majority wanted to talk with someone about returning to the community.

Figure 11.3 - MDS 3.0 Distribution of Responses for Return to Community (n=1795 admissions)

Chapter 11: Other Notable MDS Advances

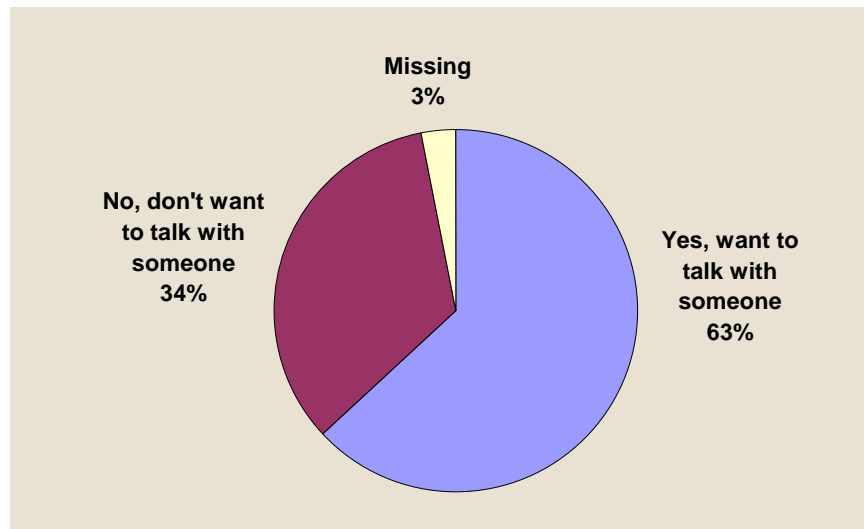We are recommending that both the Goals of Care and Return to Community items be included in MDS 3.0. Both emphasize resident choice and input to optimize resident-centered care planning. Both items had high reliability. Staff members rated the goals of care item as useful for clarifying expectations and initiating discussions about care planning needs. Because some nurses reported that some of their residents had difficulty with the return to community question, we also recommend that facilities be provided with decision support tools to help them talk to residents about the return to community issue and in completing related follow-up activities.

MDS 3.0 Feedback and Reliabilities on Additional Items

We obtained feedback on all sections and reliabilities on all items in MDS 3.0. The following table (see Table 11.1) summarizes feedback and item reliabilities for some of the items not discussed in this or preceding chapters, but that underwent some change.

Chapter 11: Other Notable MDS Advances

Table 11.1 - Feedback and Reliabilities on Additional Items

Item	Reliability (kappa)		Feedback Information
	Gold-Standard (GS) to GS	GS to facility (FN)	
A: PASRR	N/A	.830	• 74% of respondents noted that the new PASRR item (A6) is clearer and more relevant to facility requirements than MDS 2.0 items AB9 (mental health history) and AB10 (Conditions related to MR/DD status)
G4: Functional Limitation in Range of Motion • Combined upper extremity items • Combined lower extremity items	.957	.934	• 93% agreed that combining shoulder, elbow, wrist and hand into "upper extremity" made the section easier to rate (0% disagreed) • 94% agreed that combining hip, knee, ankle, and foot into "lower extremity" made section easier to rate (0% disagreed)
G6: Bedfast • Added definition from instruction manual to form because of historic miscoding	.903	.906	• 87% felt that the new description of bedfast made the item clearer and easier to complete (1% disagree)
J9: Shortness of breath • Grouped different types together • Differentiation between with activity and at rest	.985	.962	• 96% of respondents felt that definitions were clear
N1: Medications: Injections • Added medications to label	.990	.944	• 80% found limiting injections to medication an improvement in clarity (6% disagreed)
N2: Medications: Anticoagulant (warfarin, heparin, or low-molecular weight heparin) • Added to medication list	.991	.976	• 97% rated this an important addition to MDS 3.0

Item	Reliability (kappa)		Feedback Information
	Gold-Standard (GS) to GS	GS to facility (FN)	
O1: Special Treatments and Programs	.844	.901	• 90% agreed that the new isolation or quarantine item is clear (3% disagreed) • 74% reported that that at least some of their residents have required isolation or quarantine (12%)
O2: Influenza Vaccine	for flu vaccine given		• 80% noted that the addition of the "does not apply" to the vaccination sections was helpful (6% disagreed) • 93% felt that limiting the flu vaccine question to ARD's between October 1 and March 31 will decrease confusion
	.989	.941	
	for reason not given		
	.976	.820	
O6 and O7: Physician Examinations and Orders	.932	.933	• 59% felt that the physical exam and orders items do very little to capture the real complexity of the resident (17% disagreed) • 70% agreed that the label change to "physician examination" in MDS 3.0 made the item's intent clearer (12% disagreed)
Included in assessment: significant other	.417	.548	• The TEP, after the field trial, reviewed the reduced agreement. They endorsed the research team recommendation to combine family and significant other as a data source to be consistent across sections.

MDS 3.0 Chapter 12: Using MDS 3.0 in Resource Utilization Groups

Introduction

It has been more than ten years since the development of MDS 2.0 and the intervening years have seen advances in clinical medicine. The MDS 3.0 seeks to introduce some of the important clinical advances into nursing home resident assessment. Where possible, it uses assessment approaches from other settings which have the potential to improve both nursing home care and communication across settings as well as our understanding of clinical progress through time. These revisions may completely change the structure of the data within the MDS form, particularly when the change involves converting from staff observation to a resident interview approach as is the case with the new pain and depression assessments. These changes are both critically important because both of these conditions are seriously under-detected with current methods. Other more minor types of changes involve item wording or response format changes aimed at simplifying, clarifying, updating, or correcting an item or items. A third type of change involves the period of time, or look-back period, covered by an item. MDS 3.0 attempted to standardize the look-back period to 5 days, a decrease from the 7 day, 14 day, and 30 day periods used in MDS 2.0. Finally, some items were deleted from MDS 3.0, usually upon the recommendation of our Expert Panels, who felt that these items, although important, were difficult to capture accurately as part of the MDS data collection process. In this section of the report, we explore how changes introduced in MDS 3.0 can be used in the current Resource Utilization Groups (RUGs) and how they might affect nursing home payment.

Methods

Sample

The dataset includes 3,258 residents with matched MDS 2.0 and MDS 3.0 forms. The data were collected between September 2006 and February 2007. The residents were drawn from 71 nursing homes in 8 states. The average number of residents per nursing home was 46 with a range of 9 to 77. The mean age of the residents in the sample was 79 years old and 32% were male.

The MDS 2.0 and the MDS 3.0 assessments for a resident always used the same Assessment Reference Date (ARD). MDS 2.0 assessments were collected according to standard facility protocol, by the regular facility staff. MDS 3.0 interview items were collected within 24 hours of the ARD. Nurse data collectors were carefully instructed not to view the MDS 2.0 form while collecting the MDS 3.0 and vice versa.

The field trial data set includes 2,909 crosswalk cases with an MDS 3.0 collected by a study-trained facility nurse and an MDS 2.0 collected by facility staff according to their customary procedures.[xiii] In addition, because we found excellent reliability and very few

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[xiii] To maximize the potential data use and efficiency, 899 of the 2,909 crosswalk cases also include a second MDS 3.0 assessment collected by one of the gold standard nurses. These 899 paired MDS 3.0 assessments, one collected by a facility nurse and the other by a gold standard nurse, formed the sample for the gold standard to facility reliability analyses.

differences between the gold standard to gold standard reliability sample and the gold standard to facility nurse reliability sample, one MDS 3.0 was randomly selected from each of the 349 gold standard to gold standard nurse reliability cases. Thus 349 of the 3,258 MDS 3.0 cases were collected by one of the 16 gold standard nurses and the remaining 2,909 cases were collected by the 71 facility nurses. All MDS 2.0 forms were collected by facility nurses using their regular MDS 2.0 data collection procedures.

In selecting residents for the field trial, the evaluation team aimed to capture a representative sample of short- and long-stay residents. Data collectors were instructed to capture cases as they were scheduled for MDS 2.0 assessment. Resident characteristics were not used in sampling with one exception. To maximize the amount of data available, data collectors were instructed **not** to include any comatose residents in the sample, and to give preference, where possible, to cases with full MDS 2.0 assessments. As a result, a little over half the sample was admission cases – 30 percent were 5 day Medicare assessments and 15 percent were 14 day Medicare assessments. Twelve percent of the cases were quarterly assessments and 20 percent were annual assessments. Because no changes were planned for Section T of MDS 2.0, it was not collected. Section T includes the prescribed rehabilitation therapies, so many 5 day Medicare assessment cases that would have been classified as Rehabilitation get classified elsewhere in our sample. Because this is true for both the MDS 2.0 and the MDS 3.0, it should not affect the conclusions of our analysis.

The RUGS Classification System

The RUGs system is used for nursing home payment by the Medicare Program and in some states by the Medicaid program. Differences in programmatic needs between Medicare and different Medicaid programs have led to the development of several variants. In the work presented here, we use the Medicare RUGs model with 53 payment cells. The RUGs system uses MDS 2.0 data to classify each nursing home resident into one of the classification cells. A payment weight is then associated with each cell. The RUGs system has 3 tiers with 8 major classification groups and 1 or 2 different types of splits within each major group. The 8 major groups are: 1) Rehabilitation Plus Extensive Services, 2) Rehabilitation, 3) Extensive Services, 4) Special Care, 5) Clinically complex, 6) Impaired cognition, 7) Behavior problems, and 8) Reduced physical function. The system is hierarchical in the sense that each resident is classified into the highest tier for which he/she meets the requirements.[xiv]

The Rehabilitation groups include all residents who receive at least 45 minutes of physical, speech, or occupational therapy per week. Extensive services groups include residents who receive complex clinical care such as intravenous feeding or intravenous medications, suctioning, tracheostomy care, or ventilator care. Special Care cases are those with serious medical conditions such as multiple sclerosis, or cerebral palsy, or those with complex care needs such as daily respiratory therapy, radiation treatment,

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[xiv] The RUGs program used for these analyses is hierarchical, that is, each resident is classified into the highest tier for which he/she qualifies. Index maximizing software, available from some vendors, first classifies each resident into each tier for which he/she is qualified, and then selects the payment cell with the highest payment weight. Since higher tiers usually (though not always) have higher payment weights, these approaches yield similar results.

surgical wound care, or stage 3 or 4 pressure ulcers. The Clinically Complex group includes selected conditions that require skilled nursing management such as burns, coma, septicemia, pneumonia, dehydration, tube feeding, chemotherapy, or dialysis. The Impaired Cognition group includes residents with poor decision making skills and short term memory loss. Residents who do not meet the requirements for any of the first 6 groups and are verbally or physically abusive or have socially inappropriate behavior or suffer from delusions or hallucinations fall into the Behavioral Problems tier. Residents whose primary needs are for assistance with activities of daily living or for supervision are classified in the Reduced Physical Function group.

The first level split for the two Rehabilitation groups is total minutes of rehabilitation therapy in the last 7 days. The number of different types of clinical services needed splits the Extensive services group. Activities of daily living split the Special Care group while the presence of depressive symptoms splits the Clinically Complex group. The number of nursing rehabilitation services needed daily or almost daily splits the Impaired Cognition, Behavioral Problems, and Reduced Physical Function Groups. Table 12.1 shows the major groups and the different splits. The number of payment cells in each major group is shown in parentheses after the last split.

Table 12.1 - Resource Utilization Groups

Major Group	First Split	Second Split
Rehabilitation plus Extensive services needed	Therapies	Activities of daily living (9)
Rehabilitation	Therapies	Activities of daily living (14)
Extensive Services	Number of clinical services (3)	
Special care	Activities of daily living (3)	
Clinically complex	Depression	Activities of daily living (6)
Impaired cognition	Daily Nursing rehabilitation services	Activities of daily living (4)
Behavioral problems	Daily Nursing rehabilitation services	Activities of daily living (4)
Reduced physical function	Daily Nursing rehabilitation services	Activities of daily living (10)

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Analyses

The RUGs analyses were all performed using the RUG-III Version 5.2 Grouper provided by the Iowa Foundation for Medical Care. No programming changes were made to the Grouper program. The Grouper program uses 108 variables from MDS 2.0 to classify resident into one of 53 payment categories. The results presented here were obtained by manipulating input and output streams from the Grouper. MDS 3.0 measures were assigned to MDS 2.0 variable names. Adjustments were sometimes made to accommodate differences in the look-back period.

In order to understand how different changes in MDS 3.0 affected RUGs classification, we used an incremental approach to the analyses. We began by classifying each resident using MDS 2.0 data. Then we introduced MDS 3.0 measures with major clinical changes and other revised measures that were used broadly throughout the classification system one at a time so that we could assess their individual impact on the classification system. Next, we performed a RUGs run using only MDS 3.0 data. Our last series of runs analyzed the effects of reverting back to some MDS 2.0 measures. In particular, we looked at the impact of restoring deleted items and of reverting to the MDS 2.0 look-back windows when these were the only thing that differed between the MDS 2.0 and MDS 3.0. A final run uses the blend of MDS 3.0 and MDS 2.0 items from our final recommended MDS 3.0 instrument. A listing of the RUGs runs is shown in Table 12.2.

Table 12.2 - Runs used in RUGs Analyses

1.   Baseline – RUGs using only MDS 2.0 data
2.   RUGs using MDS 2.0 but with depression from MDS 3.0
3.   RUGs using MDS 2.0 but with cognitive ability from MDS 3.0
4.   RUGs using MDS 2.0 but with behavioral problems from MDS 3.0
5.   RUGs using MDS 2.0 with nursing rehabilitation from MDS 3.0
6.   RUGs using MDS 2.0 with activities of daily living from MDS 3.0
7.   RUGs using MDS 2.0 with rehabilitation therapies from MDS 3.0
8.   RUGs using MDS 3.0 trial version only
9.   RUGs using MDS 3.0 but with deleted MDS 2.0 signs and symptoms added back
10. RUGs using MDS 3.0 but with deleted MDS 2.0 diagnoses added back
11. RUGs using MDS 3.0 but with MDS 2.0 therapies added back
12. RUGs using MDS 3.0 but with MDS 2.0 special treatments added back
13. RUGs using MDS 3.0 but with MDS 2.0 therapies and special treatments added back
14. RUGs using MDS 3.0 – recommended version

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Outcome measures

We use both resident level and nursing home level measures of outcome. At the resident level, we are interested in how classification into RUGs cells changes from one run to another. To help understand the effects of a change, we calculate the percentage of residents who are classified into the same payment cell in different analyses. Next we calculate how much change occurs within a major group and across major groups. Finally, we calculate the average payment weight for each run and the percent change.

At the nursing home level, we focus on the payment weights, that is, the case-mix index, calculating the average case-mix index for each nursing home associated with each run. We then calculate the percentage change in the case-mix index at the nursing home level. Lastly we look at the percent of nursing homes with more that a 10% change in their case-mix index. We use a criterion that if more than 10% of the nursing homes experience changes of 10% or more in their case-mix index, then the MDS 3.0 revisions may be having too large an impact on payment.

Implementation and Findings

Unable to Classify due to missing Data

Some variables in the RUGs system are required and cases that are missing any of these measures cannot be classified into a payment cell.[xv] In particular, the four late loss ADL measures (bed mobility, transfer, toileting, and eating) are required. We found 18 MDS 2.0 cases were missing some of these fields and 9 MDS 3.0 cases, so all 27 cases were removed from the results reported below, leaving a sample of 3,231 cases.

Depression

Depression is one of the clinical areas where the MDS 3.0 introduced significant changes. The Patient Health Questionnaire (PHQ-9), a 9 item resident interview replaced the staff observation items used in the MDS 2.0 where feasible. For the 10 percent of residents who could not be interviewed, the PHQ-9 was adapted to a staff observation format. A strong advantage of the PHQ-9 is that the problems asked about map to the DSM-IV criteria for diagnosis of clinical depression. The look-back period for the PHQ-9 is 14 days, a reduction from the 30 days used in the MDS 2.0.

The primary rationale for this change was to improve the detection of depression in nursing home residents. Field test data established that depression detection was higher with the PHQ-9, 25.5% compared to 13.0% in the MDS 2.0. In addition, the field test demonstrated that the PHQ-9 was more highly correlated with the gold standard measures, the mSADS for residents without severe cognitive impairment, and the Cornell for residents with severe cognitive impairment than the MDS 2.0 measure. Lastly, the PHQ-9 is being used in other clinical settings so its incorporation into nursing home

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[xv] Most CMS and vendor software will not accept MDS forms without all required fields. However, since the project handled all of its own data entry, some incomplete forms were submitted.

assessment facilitates cross-setting comparisons and the tracking of disease progression through time.

The PHQ-9 included in MDS 3.0 is a 9 item resident interview in which the resident is first asked whether or not he or she has been bothered by a problem during the last 2 weeks. If the resident responds positively, then he or she is asked how often during that time frame he or she experienced the problem. Since the 9 items correspond to the DSM-IV diagnostic criteria, response patterns can then be used to classify the depressive symptoms into one of three categories, no depression, minor or major depression depending on which and how many symptoms are positive. A resident is considered to have minor depression if she indicates that she has been bothered by 2 or 3 symptoms each for at least 7 of the past 14 days and one of them is item (a) "little interest or pleasure in doing things" or item (b) "feeling down, depressed or hopeless." Residents with 5 or more symptoms including item (a) or item (b) are considered to have major depression.

A second way to use the PHQ-9 is with its continuous depression severity score. For each symptom that the resident indicates she has, a score of 0-3 is given depending upon the frequency of the symptom. Symptoms present for 2-6 of the 14 days are scored 1, while those present on only one day or not present are scored 0. Symptoms present for 7-11 days are scored 2 and those present 12-14 days are scored 3. These frequency scores are summed across the 9 items yielding a severity score between 0 and 27. While there are established ranges of the depression severity measure that indicate the presence of depression and its severity, the measure can also be used with a selected cut point to identify a specific percentage of residents with depression. This approach enables one to identify any subset of residents with depression and to select only those with the most severe cases. The latter approach could be used to maintain cost neutrality within the RUGs system for example. Thus if the MDS 2.0 identified 15 percent of residents as having depression then one could find a cut point on the PHQ-9 depression severity score that identified the 15% of residents with the most severe depression and cost neutrality would be maintained.

In the field trial, around 13 percent of the residents were not able to do the resident interview. For these residents we asked a staff member who knows the resident to answer the PHQ-9 items. Because it is often difficult to observe feelings accurately and in our pilot work staff assessors identified fewer depressive symptoms, a 10th item on irritability was added to the staff assessment. In the diagnosis of minor or major depression, this item could substitute for items (a) or (b). In the severity score, it was treated as a 10th measure making it theoretically possible to score 30 points, though no one in the sample did.

The MDS 3.0 (PHQ-9) depression data were then used in the RUGs grouper. All other data for the run came from the MDS 2.0. In the RUGs system, depression affects only the Clinically Complex group which has 6 payment cells, three for residents with depression and different levels of ADL function and three for residents without depression in the corresponding levels of ADL function. Ninety-six percent of the residents were classified

into the same RUGS payment cell in this run with the MDS 3.0 depression data compared to the baseline full MDS 2.0 run. The distribution across major RUGs groups was unaffected as all of the changes were within the Clinically Complex group where the three payment cells with depression increased relative to the baseline case and the 3 cells without depression decreased. The overall change in the case-mix index was an increase of 0.04% (See Table 12.3). At the nursing home level, across the 71 homes in our sample, the largest decrease in the case-mix index was 2.8 % and the largest increase was 1.2% (see Table 12.4).

Impaired Cognition

The assessment of cognitive impairment is another area where the MDS 3.0 introduced important changes. The Brief Interview for Mental Status (BIMS) is a performance-based assessment of cognitive ability that tests concentration, recall, and orientation. Residents are asked to repeat three words, to state the current year, month, and day of the week, and to recall the original 3 words. Prompting is used and partial credit is given for nearly correct answers.

The primary rationale for introducing the BIMS was to improve assessment accuracy and consistency across nursing homes. The field test demonstrated that the BIMS had excellent reliability and outperformed the MDS 2.0's Cognitive Performance Scale (CPS) when validated against the 3MS, an expansion of the Mini Mental Status Exam which was used as the gold standard measure. For residents who were unable to communicate, we continued to rely on the CPS, an observational assessment completed by staff.

BIMS cut points for cognitive impairment and severe cognitive impairment were established using receiver operating characteristic curves to predict cognitive impairment and severe cognitive impairment in the gold standard 3MS measure. This analysis showed that residents scoring less than 13 on the BIMS had cognitive impairment and those scoring less than 8 had severe cognitive impairment. Because the RUGs Impaired Cognition group does not include all residents with cognitive impairment but rather is limited to those with an MDS 2.0 Cognitive Impairment Score of 3 or higher, we established a comparable cut point for the BIMS. The comparable group included all residents scoring less than 11 on the BIMS.

Impaired cognition is a major grouping within the RUGs system so changes can affect the distribution of cases within the Impaired Cognition group and the distribution of cases to the groupings below it, that is, the Behavioral Problems group and the Reduced Physical Function group. As impaired cognition is also part to the Extensive Services groups, changes can also affect the composition of this group as well as the Rehabilitation plus Extensive Services Group.

To assess the effect of the BIMS, we used the RUGS grouper with all MDS 2.0 data except for the cognitive assessment. Here the MDS 3.0 BIMS was substituted for the MDS 2.0 CPS elements. When the BIMS assessment was not performed, we used the CPS comparable items from the MDS 3.0. When we compared this run with the baseline case that used only MDS 2.0 data, we found that 96% of the residents were classified into

the same RUGS group in both runs. The mean case-mix weight increased 0.2%. The primary effect on the distribution of cases was to increase the percentage of cases in the impaired cognition and behavior groups and to decrease the proportion in the Reduced Physical Function group. At the nursing home level, the largest decrease in the case-mix index was 3.3% and the largest increase was also 3.6%. As with the introduction of the depression assessment, no nursing home experienced a change of greater than 10%.

Behavioral Problems

The MDS 3.0 section on behavior incorporates the delusions and hallucinations items. Behavioral problems are described with new language and the content has been reorganized and differs somewhat. In addition, the MDS 3.0 has added a section on the impact of observed behaviors. The look-back period has been reduced from 7 to 5 days.

The primary rationale for these changes was the clinician desire to better identify behaviors warranting intervention. Further, advocacy groups disliked the language around behavior problems in the MDS 2.0 indicating that it was pejorative to residents. The field trial found that the revised items had excellent reliability and better validity than the MDS 2.0 items when tested against the Cohen Mansfield Agitation Inventory.

To understand the effect of these changes on the RUGs classification, we substituted the MDS 3.0 behavior items into the MDS 2.0 and ran the RUGS grouper. When an MDS 2.0 behavior occurred on 4 or more of the last 7 days, it affected the classification. With the reduction in the look-back period from 7 to 5 days, we considered any behavior observed on 3 or more days to count in the classification. Since Behavioral Problems is a major group, revisions can affect classification into both Behavioral Problems and Reduced Physical Function. When we compared this run to the baseline full MDS 2.0 case, we found that 99% of the cases were classified into the same payment cell. Overall, the mean change in the case-mix weights was a decrease of 0.02% for individuals and 0.06% across nursing homes. The range of changes in the nursing home case-mix index went from a decrease of 1.6 % to an increase of 0.4%. As with the other clinical changes no nursing home experienced a change in CMI of more than 10%.

Nursing Rehabilitation/Restorative Services

The primary change to the Nursing Rehabilitation section reduced the look-back period from 7 to 5 days. The list of 10 nursing services is identical in the two versions of the MDS. Within the RUGs system, "Any scheduled toileting plan" or "Bladder retraining program" gets counted as an additional nursing service. This item is significantly changed in the MDS 3.0. The definition of a toileting program was included and previous failed toileting program efforts are noted. Under the MDS 3.0 definition, substantially fewer residents are on a current toileting program.

The rationale for the inclusion of a clear definition of toileting program was to improve the accountability and reliability of the item. The changes in the look-back period were part of the effort to improve consistency with the use of a constant short look-back for neatly all items in the MDS 3.0.

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Since RUGs counts only the number of nursing services that are received 6-7 days per week, we added 2 days to each MDS 3.0 value on input to the RUGs program. Thus services that were recorded in MDS 3.0 as received on 4 or 5 days of the 5 day look-back were counted as 6 or 7 days in the RUGs analysis. In the RUGs system, nursing services have the potential to affect cell assignment within 5 of the 8 major groups. Nursing services affect the lowest groups within the major groupings of Rehabilitation plus Extensive Services and Rehabilitation. In addition, they are part of the splits for the Impaired Cognition, Behavioral Problems, and Reduced Physical Function groups. When we used the MDS 3.0 nursing service and toileting items in a run with all other measures from MDS 2.0 and compared it to the baseline all MD S2.0 run, we found that in 98% of the cases, residents were placed in the same payment cell. The net shifting was a decrease from those with 2 or more "daily" nursing services to the 0 or 1 daily nursing service. Overall, this change reduced the mean case-mix weight 0.08 for individuals and 0.15 % across the nursing homes. At the nursing home level, the largest decrease in the case-mix index was 3.7% and the largest increase was 0.5%. As with the other MDS 3.0 clinical changes, no nursing home experienced a change of more than 10%.

Activities of Daily Living (ADLs)

The MDS 3.0 made several changes to the activities of daily section. First, it integrated the self-performance scale and the staff support scale into a single scale which used the most dependent episode. This differed from the MDS 2.0 which used the most dependent episode for staff support but "typical or average" episode for self performance. In addition, MDS 3.0 separates out toilet transfer from toileting and reduces the look-back period from 7 to 5 days.

The rationale for integrating the two scales was to simplify scoring and hopefully improve consistency. The separation of toilet transfer and toilet use recognizes skill distinctions that rehabilitation providers consider important.

The RUGS activities of daily living scale uses the self performance and staff support components of 4 items: bed mobility, transfer, toileting, and eating. The scale ranges from 4 to 18 with higher scores indicating greater dependence. This ADL scale is the end split for 7 of the 8 major groups within the RUGs system.

We tried several different approaches to recombining the toilet use and toilet transfer items. The best approach used the more dependent of the two values when toilet transfer occurred. When the latter did not occur, then the toilet use value was used. When we compared a RUGs run that used ADLs from MDS 3.0 and all other variables from MDS 2.0 with the baseline case (all MDS 2.0 items) we found that 84% of the cases were classified into the same payment cell. The overall change in the mean payment weight was a 0.6% decrease. At the nursing home level, changes in the nursing home case-mix index ranged from a decrease of 6.3% to an increase of 3.2%. As with the other changes, no nursing home experienced a change of 10% or more.

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Rehabilitation Therapies

The MDS 3.0 did not change the rehabilitation therapy items; the number of days and therapy minutes are recorded exactly as in MDS 2.0. However, it did alter the look-back period, reducing it from 7 to 5 days and this change had a substantial impact.

The rationale for the change in the look-back was to make it consistent with other sections and to improve reliability.

In the top 2 major groups, Rehabilitation plus Extensive Services and Rehabilitation, RUGs classification uses therapy days and the sum of therapy minutes across the three disciplines: physical therapy, occupational therapy, and speech language pathology. With the reduced look-back period, we needed to establish equivalent levels for MDS 3.0. For the day requirements, we treated 2 and 4 days in MDS 3.0 as equivalent to 3 and 5 days in MDS 2.0. The MDS 2.0 cutoffs and the MDS 3.0 equivalents that we used are shown below. With these equivalents, we found that 73% of the cases were classified into the same payment cell. The mean case-mix weight fell 2.4%. At the nursing home level we found that the largest decrease in the case-mix index was 22.8% and the biggest increase was 8.8%. Further, we found that 8.4% of the nursing homes in our sample experienced reductions in their case-mix index of 10% or more.

Table 12.3 - Rehabilitation Minutes

Rehabilitation Category	MDS 2.0 Minutes Required	MDS 3.0 Equivalents
Ultra high	720	540
Very high	500	350
High	325	250
Medium	150	125
Low	45	35

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Table 12.4 - Adding Field Trial Items to MDS 2.0 Resident Level Outcomes by RUGs Run

| | | Mean case mix weight | Change in case mix weight (%) | Distribution of residents across Major RUGs Groups (%) | | | | | | | | Agree with baseline (%) |
				Rehab + Extended Services	Rehab	Extended Services	Special Care	Clinically Complex	Impaired Cognition	Behavior	Reduced Physical Function	
	Baseline MDS 2.0	**30.55**	-	**25.0**	**24.7**	**6.1**	**5.6**	**12.2**	**5.8**	**1.1**	**19.5**	-
MDS 2.0	+ MDS 3.0 Depression	30.56	0.04	25.0	24.7	6.1	5.6	12.2	5.8	1.1	19.5	96.3
	+ MDS 3.0 Cognition	30.61	0.21	25.0	24.7	6.1	5.6	12.2	6.9	1.3	18.2	95.7
	+ MDS 3.0 Behavior	30.54	-0.02	25.0	24.7	6.1	5.6	12.2	5.8	1.0	19.7	99.4
	+ MDS 3.0 Nursing Restorative Care	30.52	-0.08	25.0	24.7	6.1	5.6	12.2	5.9	1.1	19.5	97.7
	+ MDS 3.0 ADLs	30.37	-0.59	24.3	25.4	5.8	5.9	12.1	5.8	1.1	19.5	83.6
	+ MDS 3.0 Therapies	29.81	-2.42	24.6	22.9	6.5	5.9	13.0	5.8	1.1	20.2	73.3

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Table 12.5 - Adding Field Trial items to MDS 2.0 Nursing Home Level Outcomes by RUGs Run

		Mean NH Case Mix Weight	Min NH case mix weight	Max NH case mix weight	% change in mean case mix weight	Largest % decrease in NH case mix weight	Largest % increase in NH case mix weight	% of NH with change >= 10%
	Baseline MDS 2.0	**30.71**	**10.38**	**46.47**	-	-	-	-
MDS 2.0	**+ MDS 3.0 Depression**	30.73	10.10	46.47	0.03	-2.78	1.23	0
	+ MDS 3.0 Cognition	30.78	10.40	46.27	0.23	-3.34	3.59	0
	+ MDS 3.0 Behavior	30.70	10.25	46.47	-0.06	-1.60	0.41	0
	+ MDS 3.0 Nursing Restorative Care	30.68	10.00	46.47	-0.15	-3.70	0.51	0
	+ MDS 3.0 ADLs	30.50	10.48	46.24	-0.67	-6.30	3.16	0
	+ MDS 3.0 Therapies	29.88	10.29	46.18	-2.45	-22.80	8.79	8.45

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MDS 3.0 Development and National Evaluation

Full Implementation of the Field Trial Version of MDS 3.0

In order to assess the cumulative effect of the above changes and the full range of changes in the field trial version of MDS 3.0, we next used the RUGs Grouper using only MDS 3.0 data. In addition to the adjustments discussed above, the change in the look-back period led us to add 2 days to the MDS 3.0 values for each of the following variables: Number of days with injections, Number of days with physician order changes, and Respiratory therapy days.

When we compared this full implementation MDS 3.0 run with the baseline MDS 2.0 run, we found that 40% of the cases were classified into the same payment cell. The mean change in payment weight was a reduction of 5.9% (see Table 12.6). At the nursing home level, the largest change in the case-mix index was a decrease of 42.8 percent and the largest increase was 13.5%. Almost 30 % of the nursing homes in our sample experienced a change (usually a reduction) of 10% or more in their case-mix index (see Table 12.7). Based on our pre-established criterion, full implementation of the field trial version of MDS 3.0 might have too large an impact on payment. As we saw above, the new clinical measures contribute very little to this difference, therefore we analyze below other factors to understand what does account for the difference. Our intent was to identify changes to include in the recommended MDS 3.0.

What accounts for the differences?

Deletions

Several MDS 2.0 items were deleted from MDS 3.0. Signs and symptoms that were deleted include fever, vomiting, internal bleeding, and dehydration. When these were added back into the MDS 3.0 from the MDS 2.0 data, the average payment weight increased from 28.75 to 28.77 and the difference was 5.8% below the baseline case (see Table 12.6). When the omitted diagnoses, septicemia and quadriplegia, were added back in from the MDS 2.0, the mean payment weight increased to 28.79 and the difference remained at 5.8% below the baseline. Thus, the omitted items did not explain the observed difference.

Changes in the look-back period

In MDS 2.0, the look-back period for special treatments such as chemotherapy, dialysis, IV medications, radiation, oxygen therapy, suctioning, tracheostomy care, ventilator use, and transfusions used in the RUGS classification system is 14 days. This look-back is reduced to 5 days in the MDS 3.0 and this reduction does affect the observed rates of use. When we substituted the MDS 2.0 special treatment section with its longer look-back into the MDS 3.0 run, the agreement with baseline increased. The percentage of cases that mapped into the same payment cell increased from 40 to 48% and the difference in the mean payment weight fell from 5.9% below baseline to 2.9% below baseline (see Table 12.6). The percent of nursing homes with more than a 10% change in their case-mix index fell from 30% to just under 10% (see Table 12.7).

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In the section above, we saw that the look-back period had a major impact on the number of therapy days and therapy minutes recorded. When we used the therapy days and minutes from MDS 2.0 and all other variables from MDS 3.0, we found that the percent of cases that mapped into the same payment cell increased from 40 to 55%. The difference in the mean payment weight fell from 5.9% below baseline to 2.7% below baseline. At the nursing home level, the percent of nursing homes with more than a 10% change in their case-mix index fell from 30% to 7%.

When both special treatments and therapies from MDS 2.0 are used with other variables from MDS 3.0, the differences were further reduced. The percent of cases that were classified into the same payment cell as the baseline run increased to 69% and the difference in the average payment weight fell from 5.9.0% below baseline to 0.4% below baseline. At the nursing home level, the percent of nursing homes with a 10% or higher drop in their case-mix index fell to 1%.

In the final recommended version of the MDS 3.0, the look-back changes for RUGs treatments and therapies variables revert to their MDS 2.0 format. A final RUGs run with the proposed final item set showed that the difference in the average payment weight was less than a quarter of one percent. Nearly 71% of cases are classified into the same payment cell using either the MDS 2.0 or the proposed new MDS 3.0 (see last row of table 12.6). Only 1 of the 71 nursing homes in the field trial has a change in its case-mix index that is greater than 10% (see last row of table 12.7).

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Table 12.6 - Substituting or Adding MDS 2.0 Items for MDS 3.0 Field Trial Items Resident Level Outcomes by RUGs Run

		Mean case mix weight	Change in case mix weight (%)	Distribution of residents across Major RUGs Groups (%)								Agree with baseline (%)
				Rehab + Extended Services	Rehab	Extended Services	Special Care	Clinically Complex	Impaired Cognition	Behavior	Reduced Physical Function	
	Field Test MDS 3.0[xvi]	**28.75**	**-5.87**	**11.9**	**35.5**	**4.6**	**6.4**	**14.9**	**6.5**	**0.9**	**19.3**	**40.0**
Field Test MDS 3.0	**+Deleted Signs & Symptoms**	28.77	-5.83	11.9	35.5	4.6	6.5	14.9	6.5	0.9	18.8	40.2
	+Deleted Diagnoses	28.79	-5.76	11.9	35.5	4.6	6.6	15.2	6.4	0.9	18.9	40.4
	+ MDS 2.0 Therapies	29.72	-2.69	12.2	37.6	4.3	6.3	13.8	6.6	0.9	18.4	55.2
	+ MDS 2.0 Special Treatments	29.65	-2.94	23.6	23.9	6.2	5.9	14.3	6.4	0.9	18.9	47.6
	+ MDS 2.0 Therapies & Special Treatments	30.41	-0.43	24.0	25.7	5.8	5.8	13.3	6.5	0.9	18.0	69.2
	Baseline MDS 2.0	**30.55**	**-**	**25.0**	**24.7**	**6.1**	**5.6**	**12.2**	**5.8**	**1.1**	**19.5**	**-**
	Final Recommended MDS 3.0	**30.47**	**-0.24**	**24.0**	**25.7**	**5.8**	**6.0**	**13.7**	**6.3**	**0.9**	**17.6**	**70.8**

[xvi] Not final recommended form

Chapter 12: Using MDS 3.0 in Resource Utilization Groups

**Table 12.7 - Substituting or Adding MDS 2.0 Items for MDS 3.0 Field Trial Items
Nursing Home Level Outcomes by RUGs Run**

		Mean NH Case Mix Weight	Min NH case mix weight	Max NH case mix weight	% change in mean case mix weight	Largest % decrease in NH case mix weight	Largest % increase in NH case mix weight	% of NH with change >= 10%
Field Test MDS 3.0		**28.75**	**9.23**	**44.84**	**-5.84**	**-42.8**	**13.51**	**29.58**
Field Test MDS 3.0	+Deleted Signs & Symptoms	28.77	9.23	44.84	-5.80	-42.80	13.51	29.58
	+Deleted Diagnoses	28.78	9.23	44.84	-5.72	-42.8	13.51	28.17
	+ MDS 2.0 Therapies	29.83	9.33	45.40	-2.72	-29.85	9.89	7.04
	+ MDS 2.0 Special Treatments	29.65	9.38	45.78	-3.21	-42.00	10.27	9.86
	+ MDS 2.0 Therapies & Special Treatments	30.51	9.48	46.04	-0.65	-17.6	6.53	1.41
Baseline MDS 2.0		**30.71**	**10.38**	**46.47**	**-**	**-**	**-**	**-**
Final Recommended MDS 3.0		**30.61**	**9.62**	**46.04**	**-0.39**	**-14.40**	**6.91**	**1.41**

Chapter 12: Using MDS 3.0 in Resource Utilization Groups

Summary

In this chapter, we demonstrated how MDS 3.0 can be used in the current payment system, Resource Utilization Groups. We analyzed the effects of changes introduced in MDS 3.0. Our most important finding was that the clinical improvements, particularly in the assessment of depression, impaired cognition, and behavioral problems that were introduced in MDS 3.0 have minimal effect on payment classification or levels. Changes in the activities of daily living scale have a somewhat larger impact but still less than 1%. Proposed changes to the look-back period intended to make it more consistent and to improve reliability had substantial impact on the payment system and have consequently been eliminated. The final proposed version of MDS 3.0 maps closely to the baseline MDS 2.0 run with a difference in mean payment weights between the two versions of less than a quarter of one percent.

The payment cell distribution from our sample under-represents rehabilitation cases, which comprise nearly 75% of a national Medicare sample. This resulted because our sample included both Medicare and non-Medicare cases. Further, we placed heavy emphasis on collecting full assessment forms rather than the shorter Medicare payment forms and quarterly forms. As a result, about a third of our sample are 5-day admissions without any ordered therapy data. When section T data are collected, many of these cases that are now classified elsewhere would become rehabilitation cases. In some ways, the absence of Section T (ordered therapies) is fortuitous in that the sample is a better test of classification agreement in the non-rehabilitation segments of the payment system where the more important clinical changes introduced in MDS 3.0 are found.

Chapter 13: Using MDS 3.0 For Quality Indicators and Quality Measures

Introduction

Another important function of the MDS is its use in the assessment of the quality of care delivered in nursing homes. A set of quality indicators and later a set of quality measures were developed using MDS 2.0. A subset of the measures is posted on Nursing Home Compare, the Medicare website designed to help consumers choose a nursing home. Some researchers have also used these measures in analyses intended to help understand how different factors affect quality and how quality affects other outcomes. Thus, it is important to understand how MDS 3.0 will affect these measures.

MDS 3.0 provides an important opportunity to improve the accuracy of many of the quality indicators and quality measures. Improvements in clinical assessment are the foundation for improved accuracy. Other changes in MDS 3.0 that simplify or clarify definitions and content, can also improve the accuracy of the quality indicators and quality measures. The MDS 3.0 effort to develop a short, consistent look-back period may also have affected the quality indicators. Some problematic items in MDS 2.0 were dropped from MDS 3.0, usually at the recommendation of our expert panels. In this section, we analyze how MDS 3.0 can be used to produce quality measures.

Quality Indicators and Quality Measures (QIQMs)

The QIQMs address a variety of issues in nursing home care including restraint use, falls, depression, pressure sores, nutrition, cognitive behavior, medication use, behavior problems, and pain. An initial effort to map MDS 3.0 items where possible into QIQMs is presented in Appendix B. Each of the quality measures is presented individually. The MDS 2.0 variables as defined in the QM/QI Reports Technical Specifications: Version 1.0 are presented first, followed by candidate MDS 3.0 items. Some data comparing the MDS 2.0 and the MDS 3.0 items is presented for each QIQM along with an assessment of the type and extent of the change.

Table 13.1 lists the full set of QIQMs and summarizes information on the type of changes (major, minor, and look-back period) in MDS 3.0. Some information on our ability to calculate the measures is also noted. Seven of the measures require 2 sequential MDS assessments on the same resident usually to report incidence or change in status, but our project has assessment data from only one time period on each resident. Further, five QIQMs have a C in column 5, showing the need for prior assessments to control for covariates. Because we were unable to obtain sequential MDS assessments on the same individual, we cannot calculate the full measure. The national data collection included vaccines in the MDS 3.0 in order to provide national inter-rater reliability estimates (gold-standard nurse (GSN) to GSN and GSN to facility-nurse). We did not have the facilities also submit MDS 2.0 data because the four MDS 2.0 vaccine measures were introduced after the initiation of our field test. The table also shows which measures are contained in Nursing Home Compare, the Medicare Nursing Home website.

Chapter 13: Using MDS 3.0 for Quality Indicators and Quality Measures

Important Opportunities For Improved QIQMs in MDS 3.0

Many of the changes designed to improve clinical assessment offer important opportunities for more accurate and improved quality measures. MDS 3.0 introduced major changes to the assessment of depression, cognitive impairment, pain, behavioral problems, and delirium and each of these has the potential to substantially improve quality measures associated with these conditions. Below we summarize some of these important changes.

- **Depression:** The use of the PHQ-9 interview and staff assessment for depression provides higher depression detection rates, better reliability, and greater validity (when compared to the MSADS and Cornell) as evidenced in our field trial and has also been shown in other studies to have higher sensitivity to change. Thus we expect that QIQMs 2.1 on Residents who become more depressed or anxious and 2.3 on the Prevalence of Symptoms of Depression without antidepressant therapy will be improved with the incorporation of the PHQ-9 scores.

- **Impaired Cognition:** The introduction of a performance-based assessment, the Brief Interview for Mental Status (BIMS), to detect cognitive impairment improves assessment reliability, accuracy, and validity (compared to the 3MS) as established in our field trial. These improvements should improve the accuracy of QIQM 4.1 on the incidence of new cognitive impairment.

- **Delirium:** Delirium is a clinically important but difficult to diagnose condition. The MDS 3.0 incorporates a shortened version of the Confusion Assessment Measure (CAM) originally developed for and validated in the hospital setting but more recently adapted to nursing home use. The inclusion of the performance-based BIMS in combination with the CAM increased delirium detection rates in the field test.

- **Pain:** The MDS 3.0 pain detection interview increases pain detection rates which are known to be low in MDS 2.0. This should improve the accuracy of QIQMs 8.1 and 13.2 on the presence of moderate to severe pain. Further, the revisions include new items on the effect of pain on function and on the type of pain management regimen offer the opportunity for enhanced pain items.

- **Behavior:** The items on delusions and hallucinations are integrated into the behavior section of the MDS 3.0. This reorganization improves reliability and validity (as measured against the Neuropsychiatric Inventory) over the MDS 2.0 approach. Revised language as requested by consumer advocacy groups is used to describe the behavioral symptoms. The behaviors are also realigned somewhat. Their reliability and validity (measured against the Cohen Mansfield Agitation Inventory) are higher than the MDS 2.0 items. These revisions should improve the QIQMs 2.2 on the Prevalence of Behavioral Symptoms. In addition, the MDS 3.0 introduces items on the impact of behaviors both on the resident and on others. The impact items are intended to help clinicians determine when interventions for behavior are appropriate. They can also provide a foundation for improved quality measurement.

- **Falls and fractures:** The falls items in MDS 3.0 have been revised to include information on whether an injury resulted from the fall and if so, whether it was major (bone fracture, joint dislocation, closed head injury with altered consciousness, subdural hematoma) or a minor injury. For QIQM 1.1 on new fractures, one could calculate it in a

manner similar to the MDS 2.0 using the hip fracture and other fracture items in the diagnoses section and count only those new to this assessment or one could expand fractures to include other types of major injury. The later would not require sequential assessments. For QIQM 1.2 on recent falls, whether or not an injury occurred can now be included in the item.

- **Need for help with daily activities:** The MDS 3.0 integrates self-performance and the amount of assistance needed with activities of daily living into a single consistently measured (most dependent episode) scale. Both self-performance and the amount of staff assistance needed are important components of the need for help. Deterioration in either reflects increased needs that should affect quality measures. Alternatively, one can recode the integrated scale back into self-performance and staff assistance components. Another change to the MDS 3.0 that affects this item is the separation of toilet transfer and toileting into two items. This reflects the rehabilitation provider community perception of the different skills and effort required for these activities.

- **Spending most of ones time in a bed or chair:** The MDS 3.0 moved the definition of bedfast from the manual to the form. By placing it directly in the item, prevalence rates changed. This clarification of item intent should improve the clarity and accuracy of QIQM 9.2.

Comparability Among Remaining QIQMs

The items underlying the QIQMs are nearly all undergoing at least some minor change. Minor changes in wording may or may not impact on prevalence or incidence rates in important ways. Assessment of the impact of such changes is challenging because inter-rater and inter-temporal reliability are rarely perfect and even changes in the relative position of an item can affect its assessment. Ideally, we would like to evaluate whether and how these changes will impact the QIQMs through time. However, our cross-sectional data do not permit such testing. In Table 13.2, we present prevalence measure comparisons that approximate the QIQMs that did not undergo major change. While we do not have comparative data for the vaccine items, we have included them in the table because the look-back periods are the same, and the changes to these items are minimal.

The data file used for these analyses is the Crosswalk File described in the previous section. It contains 3,258 matched MDS 2.0 and 3.0 cases with the same Assessment Reference Date (ARD). The quality indicators and quality measures are calculated for chronic and short stay samples. For the chronic sample, we used our set of follow-up cases, eliminating cases marked as admission, just over half of our sample. For the short stay sample we began with the 492 cases coded as 14 day Medicare admissions. Thus our estimates for the chronic sample are much more precise than those for the short stay sample.

The percent agreement exceeded 90 percent on all items and was over 95 percent on all but one of the items. Kappas and correlations were very similar, ranging from .70 to .96, indicating good (3 items) to excellent agreement (8 items). It is interesting to observe that two of the measures with the lowest levels of agreement, Residents with Urinary Tract Infections and Residents with Weight Loss had the same look-back period and the same

item wording. The only change in MDS 3.0 was that the section on Infections was integrated into the Diagnosis section rather than immediately following it. The only change to the Weight loss item in MDS 3.0 was to separate intentional from unintentional weight loss in the response categories. These were recombined in the current calculation of the QIQM.

Since the QIQMs are actually reported at the nursing home level, we also looked at the MDS 2.0 and MDS 3.0 measure means and correlations at the nursing home level for the set of possibly comparable measures (see Table 13.3). Only nursing homes with at least 5 observations that met the criteria for inclusion in the QIQM were included in the analysis. As anticipated, the measures are more highly correlated at the nursing home level than at the resident level. Nursing home level correlations ranged from .80 to .98 and 7 of the 11 measures had correlations of .9 or higher.

Summary

The MDS 3.0 offers important improvements to clinical assessment that have the potential to enhance the accuracy and validity of a substantial portion of the QIQMs. The most important of these enhancements are in the area of depression assessment, pain detection, assessment of cognitive impairment and behavior. Five of the current QIs that are thought to be of questionable validity would be dropped altogether. Fifteen of the original QIQMs use items that are similar in both versions of the instrument, with only minor wording or response category changes and/or changes to the look-back period. These QIQMs have the potential to retain their measurement comparability.

Chapter 13: Using MDS 3.0 for Quality Indicators and Quality Measures

Table 13.1 - Summary of Types of Change and Assessment Needs
for Quality Indicators & Quality Measures

Chronic care measures	Major Change	Minor Change	Look-back Change	Requires 2 MDS Assess-ments	Missing MDS 2.0	Nursing Home Compare Measure
1.1 Incidence of new fractures	XX			XX		
1.2 Prevalence of falls within past 30 days	XX		XX			
2.1 Residents who have become more depressed or anxious	XX		XX	XX		NHC
2.2 Prevalence of behavior symptoms affecting others: Overall	XX		XX			
2.3 Prevalence of symptoms of depression without antidepressant therapy	XX		XX			
3.1 Use of 9 or more different medications	Dropped					
4.1 Incidence of cognitive impairment	XX			XX		
5.1 Low-risk residents who lost control of their bowels or bladder		XX	XX			NHC
5.2 Residents who have/had a catheter inserted and left in their bladder			XX	C[xvii]		NHC
5.3 Prevalence of occasional or frequent bladder or bowel incontinence without a toileting plan	XX		XX			
5.4 Prevalence of fecal impaction	Dropped					

[xvii] C = covariate

Chronic care measures	Major Change	Minor Change	Look-back Change	Requires 2 MDS Assess-ments	Missing MDS 2.0	Nursing Home Compare Measure
6.1 Residents with a urinary tract infection		XX				NHC
7.1 Residents who lose too much weight		XX				NHC
7.2 Prevalence of tube feeding		XX	XX			
7.3 Prevalence of dehydration	Dropped					
8.1 Residents who have moderate to severe pain	XX		XX	C		NHC
9.1 Residents whose need for help with daily activities has increased		XX	XX	XX		NHC
9.2 Residents who spend most of their time in bed or in a chair		XX	XX			NHC
9.3 Residents whose ability to move in and around their room got worse		XX	XX	XX C		NHC
9.4 Incidence of decline in ROM		XX	XX	XX		
10.1 Prevalence of antipsychotic use in the absence of psychotic or related conditions: Overall		XX	XX			
10.1-HI Prevalence of antipsychotic use in the absence of psychotic or related conditions: High Risk		XX	XX			
10.1-LO Prevalence of antipsychotic use in the absence of psychotic or related conditions: Low Risk		XX	XX			
10.2 Prevalence of antianxiety/hypnotic use		XX	XX			
10.3 Prevalence of hypnotic use more than two times in last week	Dropped counts					

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Chronic care measures	Major Change	Minor Change	Look-back Change	Requires 2 MDS Assess-ments	Missing MDS 2.0	Nursing Home Compare Measure
11.1 Residents who were physically restrained		XX	XX			NHC
11.2 Prevalence of little or no activity	Dropped					
12.1 High-risk residents with pressure ulcers		XX	XX			NHC
12.2 Low-risk residents with pressure ulcers		XX	XX			NHC
14.1 Percent of Long-Stay Residents Given Influenza Vaccination During the Flu Season		XX			XX	NHC
14.2 Percent of Long-Stay Residents who Were Assessed and Given Pneumococcal Vaccination		XX			XX	NHC
Post-acute measures						
13.1 Short-stay residents with delirium	XX		XX	C		NHC
13.2 Short-stay residents who had moderate to severe pain	XX		XX			NHC
13.3 Short-stay residents with pressure ulcers		XX	XX	XX C		NHC
15.1 Percent of Short-Stay Residents Given Influenza Vaccination During the Flu Season		XX			XX	NHC
15.2 Percent of Short-Stay Residents who Were Assessed and Given Pneumococcal Vaccination		XX			XX	NHC

Table 13.2 - Possibly Comparable QIQMs

QIQM	Sample size	MDS 2.0 rate	MDS 3.0 rate	% Agree-ment	Kappa	Correl-ation
5.1 Low-risk residents who lost control of their bowels or bladder	969	48.1	52.2	90.5	.81	.81
5.2 Residents who have/had a catheter inserted and left in their bladder	1358	8.6	6.4	96.9	.78	.79
6.1 Residents with a urinary tract infection	1402	10.0	7.2	95.2	.70	.71
7.1 Residents who lose too much weight	1390	8.3	8.0	96.1	.74	.74
7.2 Prevalence of tube feeding	1334	4.8	4.3	99.6	.95	.95
10.1 Prevalence of antipsychotic use in the absence of psychotic conditions	1114	16.8	16.9	98.8	.96	.96
10.2 Prevalence of antianxiety/hypnotic use	1114	18.9	18.6	96.5	.88	.88
11.1 Residents who were physically restrained	1452	3.8	3.8	98.8	.83	.83
12.1 High-risk residents with pressure ulcers	863	13.3	13.3	98.1	.92	.92
12.2 Low-risk residents with pressure ulcers	587	3.1	3.2	99.1	.86	.86
13.3 Short-stay residents with pressure ulcers****	406	25.1	23.6	97.0	.92	.92
14.1 Percent of Long-Stay Residents Given Influenza Vaccination During the Flu Season	1180	-	64.9	-	-	-
14.2 Percent of Long-Stay Residents who Were Assessed and Given Pneumococcal Vaccination	1293	-	83.1	-	-	-
15.1 Percent of Short-Stay Residents Given Influenza Vaccination During the Flu Season	282	-	57.1	-	-	-
15.2 Percent of Short-Stay Residents who Were Assessed and Given Pneumococcal Vaccination	360	-	74.4	-	-	-

****Prevalence is being reported here. QIQM actually looks at new incidence between days 5 and 14 of a nursing home stay.

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Table 13.3 - Home Level Correlations for Possibly Comparable QIQMs

QIQM	Sample size	MDS 2.0 rate	MDS 3.0 rate	Correlation
5.1 Low-risk residents who lost control of their bowels or bladder	59	51.5	55.0	.88
5.2 Residents who have/had a catheter inserted and left in their bladder	63	9.9	7.8	.96
6.1 Residents with a urinary tract infection	63	10.2	7.3	.80
7.1 Residents who lose too much weight	63	8.6	8.3	.87
7.2 Prevalence of tube feeding	62	5.1	4.7	.98
10.1 Prevalence of antipsychotic use in the absence of psychotic conditions	60	17.5	17.2	.96
10.2 Prevalence of antianxiety/hypnotic use	60	19.2	19.1	.91
11.1 Residents who were physically restrained	63	3.6	3.9	.83
12.1 High-risk residents with pressure ulcers	60	14.0	14.5	.97
12.2 Low-risk residents with pressure ulcers	43	2.8	3.1	.90
13.3 Short-stay residents with pressure ulcers****	27	26.9	26.0	.98

****Prevalence is being reported here. QIQM actually looks at new incidence between days 5 and 14 of a nursing home stay.

Discussion

The MDS 3.0 national revisions advanced the goals that CMS established at the outset of the evaluation activity. Through an objective iterative process, the RAND/Harvard team was able to incorporate advances in assessment measures including new knowledge from VA testing, apply user experience and insights from MDS 2.0, formally include resident voice, and incorporate assessment approaches used in other settings. This allowed the team to take a developed and refined tool into national testing. National testing in 71 NHs in 8 states[xviii] showed that the revised MDS met CMS's goals of improving the clinical relevance and accuracy of MDS assessments, increasing the voice of residents in assessments, improving user satisfaction, and increasing the efficiency of reports.

- **Accuracy:** MDS 3.0 items showed either excellent or very good reliability even when comparing research nurse to facility nurse assessments. In the completed national trial, MDS 3.0 assessments for depression, behavior, and cognition were validated against criterion measures in nursing home populations and were found to perform better than related MDS 2.0 items.
- **Resident voice:** MDS 3.0 successfully included resident voice. The majority of residents were able to complete interview sections for cognitive assessment, mood, preferences, and pain. Staff members reported that items provided useful clinical insights; analyses showed improved validity for cognitive and mood items.
- **Clinical Relevance:** Nurses who used MDS 3.0 reported that the revisions were more clinically relevant than MDS 2.0. Items used in other clinical settings showed either excellent or very good reliability with low rates of missing responses when tested in MDS 3.0.
- **Efficiency:** MDS 3.0 improved assessments while decreasing completion time. The average time for completing the MDS 3.0 was 45% less than the average time for MDS 2.0, based on the same sample.
- **Crosswalk:** Although MDS 3.0 improved detection of clinical problems, items could be mapped to MDS 2.0 payment cells in a manner that avoided significant shifts in assignment. The one exception, attempted improvements to reporting treatments, will be further explored by a payment recalibration project within CMS.

These gains reflect improvements across the MDS in content, clarity, and form. However, before discussing these overall gains in the tool, we highlight some specific advances.

A structured cognitive assessment, the ***Brief Interview for Mental Status (BIMS)***, was completed by 90% of residents and was more highly correlated with a criterion measure of cognition than was the MDS 2.0 subjective assessment. It was preferred by the majority of staff and provides a recommended foundation for delirium assessments.

[xviii] The MDS 3.0 was also tested in 19 regionally distributed VA NHs. Results mirror those in the community. For simplicity, the specific national prevalence results presented here reflect only the community sample.

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We recommend using the BIMS for all residents capable of making themselves understood and reserving the MDS 2.0 subjective assessment only for those residents who are unable to make themselves understood or to complete the interview.

The *Confusion Assessment Method (CAM)*, a validated delirium assessment used in other settings, was successfully used by NH staff after they attempted the BIMS and reviewed the resident's medical record. The MDS 3.0 CAM protocol yielded significant improvements in inter-rater agreement compared to MDS 2.0 delirium items. Staff preferred to use this validated tool over the old items. Prevalence of probable delirium was closer to prevalence rates reported in independent national tests. We recommend, therefore, that the more recognized and validated CAM be incorporated into MDS 3.0 to follow the structured cognitive assessment.

NH staff successfully used the *Patient Health Questionnaire (PHQ) -9 interview*, a validated depression screener that allows identification of changes in depression severity over time, to assess their residents. Eighty-six percent of the 3,258 residents in the national study completed the PHQ-9 interview. Both the PHQ-9 resident interview and the *PHQ-9 observer version (PHQ-9 OV)* were significantly more highly correlated with a criterion assessment of depression than was the MDS 2.0 mood item. The majority of staff who used the PHQ-9 interview found it better at capturing resident mood than the MDS 2.0 subjective mood items. The staff also preferred the related observer version of the PHQ-9 for those residents who were unable to complete the interview. We recommend, therefore, that the PHQ-9 interview be used for all residents capable of making themselves understood and that the PHQ-9 observation version be used for those residents who cannot complete the interview.

Revised *behavior symptom items* better align with established factors for assessing agitation. The revised items use language acceptable to both providers and consumers to label behaviors and are more highly correlated with criterion measures of behavioral problems. New items obtain information on the effect of behaviors on resident quality of life and the care environment and serve as potential severity measures. Staff who used the new items preferred them to the MDS 2.0 behavior items and reliability was high. Therefore, we recommend that the revised behavior section be used.

A new *Preference Assessment Tool (PAT)* was designed to allow NH staff to obtain resident preferences surrounding many of the domains in the University of Minnesota's quality of life measurement tool. The PAT obtains resident importance ratings for daily customary routine and for activities. The PAT was completed by 83% of residents scheduled for MDS assessments, and families or significant others completed an additional 4%. Staff preferred these items to the MDS 2.0 customary routine check list and reported gaining new insights into resident preferences. Staff feedback identified a few items in this section as potentially problematic; we addressed these items in post-trial evaluations. We recommend that the revised PAT be used for all residents capable of making themselves understood and that input be sought from family or significant others for those residents unable to complete the PAT. We further recommend that the revised

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staff observation of Daily and Activity Preferences items be completed only for those residents without a completed PAT.

An updated *pain section* includes items about *pain treatment regimens* based on chart review. A direct-interview *pain assessment* uses resident self-report to obtain pain information, aligning pain assessment with the accepted care standard across settings. Measured reliability and staff reported utility for the revised pain section were high. Items asking about the *effect of pain on sleep* and *day-to-day activities* are drawn from the Geriatric Pain Assessment. The pain severity items include the *0-10 scale*, a recognized scale that is used in other settings, and the *verbal descriptor scale*, which may be easier for some residents with cognitive impairment to answer. Our analyses of the national data set used item response theory (IRT) methods to create a crosswalk that will allow CMS programs to reconcile the verbal descriptor scale and 0-10 scale, thus giving facilities a choice of these scales.

For those residents who cannot make themselves understood or who cannot complete the pain interview, MDS 3.0 includes a list of *observable pain behaviors* to improve reliability of assessments and detection of possible pain. We recommend that the pain treatment items be collected on all residents and that the pain interview items be collected on all residents capable of communication. The staff observation of pain behaviors should be collected on residents unable to complete the pain interviews.

Improved *balance* items assess balance during transitions and walking, activities associated with increased risk for falling. New *fall* items obtain different information for admission assessments than for follow-up assessments. The admission assessment focuses on pre-admission fall history and fall-related fracture. Follow-up fall assessments obtain information on numbers and outcomes of falls. Both the revised balance and falls sections had high reliability and were preferred over the MDS 2.0 items by staff who used both the MDS 2.0 and MDS 3.0 to assess residents.

Since the *Activities of Daily Living (ADLs)* items are important in RUGs, we limited the scope of changes, focusing our attention on long-standing challenges within the MDS framework of observed performance and received support. In order to improve reliability, we replaced the MDS 2.0 mixed metric that used *average* for performance but *most dependent* for support with a revised ADL response scale that used a single metric (*most dependent*) for rating. The response categories "set up" and "supervision" were distinguished on the scale. To be scored as *totally dependent*, the resident must be unable or unwilling to perform any part of the activity. The updated ADL section separates upper body dressing and lower body dressing and separates toilet transfer from toileting to improve coding accuracy and alignment with clinical activities. The revised ADL section had high reliability and was preferred over the MDS 2.0 items by staff who used the MDS 3.0. Stakeholder feedback has been positive. Given the long-standing challenges to reliability in the ADL section, we recommend implementing these revisions.

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The revised MDS 3.0 *continence* section employs a set of items to better define toileting program trials and current program use. Both the urinary and bowel continence items change the coding of catheters and ostomies from MDS 2.0 "continent" to a new category established to capture these devices. The "usually continent" response category was combined with "occasionally incontinent" to simplify and clarify coding activities. Staff preferred the MDS 3.0 section over MDS 2.0 and reliability was high. We are recommending these improvements in the final form.

Diagnoses item-labels on the MDS 3.0 were updated with expanded lists of related diagnoses in order to facilitate staff selection of diagnostic labels. The instructions were expanded to assist staff members in deciding whether a diagnosis meets the MDS criteria for "active." Nurses who tested this section rated it as having greater usability than MDS 2.0. Coding reliability was high for the listed diagnoses; however, reliabilities were significantly lower for using "other" within diagnostic groups. Therefore, we recommend combining the updated MDS 3.0 labels and instructions with the MDS 2.0 approach of a general category for "other" at the end of the entire list of diagnoses.

We replaced a single check box for "swallowing problem" with a list of clinically observable signs and symptoms of a possible *swallowing disorder.* This change was made to improve assessment and coding reliability. A new response code for *weight loss* allows staff to note weight loss resulting from implementation of a *physician-prescribed weight-loss regimen*. Both changes were rated as improvements by staff completing the assessments and reliability was high. The recommended MDS 3.0 form includes both revisions.

Revisions to the *Oral/Dental* items developed in collaboration with the American Dental Association and the Special Care Dentistry Association had high reliabilities and were rated by staff as being likely to improve care plans. Staff did require some initial focused training to overcome barriers to performing an oral examination. We are recommending these changes in MDS 3.0.

Revisions to *Skin/ Pressure Ulcers* are designed to align this section with tested best-practices in skin assessment and pressure ulcer (PU) management. Deepest anatomical stage replaces the MDS 2.0 approach of "reverse staging" as pressure ulcers heal. This change aligns MDS with pressure ulcer assessment in other instruments and settings. For each stage 2-4, providers can indicate the number of PU present on admission. The revised form places definitions directly on the form to facilitate coding. In addition, the length and width of the largest PU at each stage 2 through 4 is obtained. MDS 3.0 items identify diabetic ulcers and venous/arterial ulcers as separate categories. These changes were welcomed by stakeholders, and the staff who used the items rated the section as improved. We recommend these improvements in MDS 3.0.

Two items in section Q are designed to identify resident goals. The first, *Goals of Care,* was developed at the request of stakeholders. The intent is that, having completed assessment of needs and abilities, providers and residents and their families discuss the resident's goals for the remainder of his/her NH stay. This item had high reliability and

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response rates. Staff members rated the Goals of Care item as useful for clarifying expectations and initiating discussions about care planning needs. We recommend that the Goals of Care item be included in MDS 3.0.

The second, ***Talk with Someone About Return to Community,*** was developed by CMS as a direct interview item to help facilities identify those residents wanting assistance in planning community discharge. The item had high reliability and response rates and aligns with a high priority program to transition long-term care residents into community settings. We therefore recommend that the Return to Community item be included. The majority of staff reported that residents appreciated being asked this item; however, some nurses noted that some of their residents were upset by the question. We also recommend, therefore, that facilities be provided with decision support tools to help them talk to residents about the Return to Community item and in completing follow-up activities.

These and other MDS improvements noted in Chapter 15 led to improved MDS performance in several areas. We discuss these gains below.

Giving Residents Voice

Perhaps the most significant quality of life advance in MDS 3.0 is the use of direct interview items to consistently elicit resident voice. Respect for the individual resident is fundamental to high quality care and to residents' quality of life. An important way to convey this respect is to ask residents directly about how they feel and about their preferences. General, unfocused questions often fail to convey a real desire to get a response and are unlikely to elicit meaningful report of symptoms or preferences. Focus groups and feedback from consumers show that residents and families want to be asked specific and direct questions.

MDS 3.0 interview items were tested to identify the best way to measure the topic in question. The item wording and response options in the revised tool have been shown to work in nursing home and other frail populations. Clinicians in other settings already use many of these items. Including structured interview items ensures that the MDS items are using a common measuring stick, increases reliability across facilities, and provides a common language for communication across settings.

In item testing, we considered "simpler" yes/no formats for the resident interview items. We found that many NH residents struggled with reducing their experience to yes/no. They found it easier to answer a question if they were allowed to select from a range of choices that reflected the variations they experience day to day. This phenomenon is well recognized in interview science. If an item asks about something that is not fixed or absolute, then having more than two response choices can make responding easier. The response options in MDS 3.0 have been carefully matched to the question being asked. The questions and response sets have been tested for clarity, ease of use, and reliability. Analysis of the national test showed that NH residents used the full range of response options available to them. The fact that they used all of the options lends additional support for the utility of the response scales.

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Residents were able to answer MDS 3.0 interview items. In a sample of 3,258 residents scheduled for MDS 2.0 assessments, the majority of residents were able to complete MDS 3.0 structured interviews. Response rates were high across the interview sections, ranging from 83% completing the preferred activities interview to 90% completing the brief interview for mental status. This national sample included the full range of cognitive levels found in U.S. nursing homes. For those residents who could not complete interviews, an alternative staff observation assessment was provided.

Some nurses expressed initial hesitation about interviewing residents. Comments included "I can't do that; I can't ask these questions;" "No way can my residents do this;" "It will take too much time." We therefore included in training activities a module on how to interview the older adult. This brief module not only aided study staff in completing the interviews, it provided instruction in fundamental communication techniques.

After only a few attempted interviews, nurse attitudes shifted dramatically. One nurse in the study commented: "This reminds me of why I became a nurse." Another wrote "It was amazing; residents don't mind being asked and you learn so much from asking."

The resident interview items contribute to, but do not replace, day-to-day interactions. Although some worry that structured items dictate the content of resident and staff interactions, staff who use the structured items consistently report that the opposite occurs. Structured questions often bring up important issues for the resident and open up discussion between the resident and provider, creating an ongoing dialogue within which it is safe to report symptoms and care needs.

Improved Accuracy and Reliability

MDS 3.0 includes many specific changes designed to improve the accuracy of assessments. In several sections, we included items that were identified by content experts and research as more valid measures of the condition than those used in MDS 2.0. Items were revised based on the experience of users and input from subject matter experts who were familiar with nursing home residents and nursing home care. In addition, MDS 3.0 includes modified response options or instructions that aim to increase clarity and therefore agreement across assessors. For example, some items combine response categories where differentiation had been difficult in the past. Instructions for diagnoses have been revised to include detailed guides to defining active disease. Overall, we did not include any new items in MDS 3.0 unless the national evaluation showed that they represented an improvement over old items.

Whenever possible, we included items or language used in other health care settings in order to improve communication across settings and providers. For example, items included in the National Pressure Ulcer Advisory Panel's PUSH tool are used to describe pressure ulcers; new ADL items separate toilet transfer from toileting and upper body dressing from lower body dressing. The new delirium section is based on the Confusion Assessment Method (CAM), a set of items that has been validated for frail older adults in hospital settings. The MDS 3.0 CAM is informed by observations made during the Brief

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Interview for Mental Status, a structured cognitive assessment that directly tests encoding, recall, and temporal orientation. Language in items has also has been revised to reflect the standards applied in other settings.

Giving residents voice also contributes to the increased accuracy and reliability of the MDS 3.0. Often the most accurate way to assess many topics is to ask the resident directly. For areas such as cognition, mood, preferences, and pain, studies have repeatedly shown that staff or family impressions often fail to capture the resident's (or any adult's) real condition or preferences. Unfortunately, staff and family observations of depressed mood and pain significantly *underestimate* the presence of these treatable conditions. This is true across settings and for both short- and long-stay residents.

Reliability, or reproducibility, of a measure is a necessary condition for valid performance. To access reliability of MDS 3.0 items, we used two kinds of comparisons: gold-standard nurse to gold-standard nurse and gold-standard nurse to facility-nurse. The gold-standard to gold-standard comparisons provided information on instrument performance when used by highly trained nurses guided by research protocols. The gold-standard to facility-nurse comparisons measured performance in a more operational environment where the assessor had ongoing facility responsibilities and less training. This later type of comparison is important for gaining insights into how the tool will actually perform. In most past tests of MDS 2.0, gold-standard to facility-nurse reliability has been much lower than gold-standard to gold-standard reliability.

Analysis of the test results showed that MDS 3.0 items had either excellent or very good reliability even when comparing research-nurse to facility-nurse assessment. In most instances these were higher than those seen in the past with MDS 2.0. High levels of agreement indicate that the revised items and instructions were clearer. This clarity likely results from improved items, adding definitions to the labels for items that have been problematic, improved form design, and shortening the survey to allow time for more focused assessments in key areas. In addition, CMS requested a design that required assessments to be conducted in temporal proximity, a better design for measuring reliability if data sources are not limited to retrospective chart review.

For the cognitive, mood and behavior items, national testing included collection of independent criterion measures. These MDS 3.0 sections were more highly matched to criterion measures than were MDS 2.0 items. We did not directly observe data collection activities to ensure independence in MDS 2.0 vs. MDS 3.0 assessments. However, the frequency with which significant differences were reported between the instruments, even for similar items, provides evidence that the assessments were indeed completed independently. It is possible that the QIOs may have selected better performing or higher quality facilities. However, this should have equal influence on the quality of both MDS 2.0 and MDS 3.0 assessments.

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Nurses underwent training prior to completing MDS 3.0. This may have improved results. In our training experience, nurses had many questions about MDS 2.0 items.[xix] We intentionally included training on retained or slightly modified MDS 2.0 items. For these reasons, we would recommend a national effort to train on the entire form. Because some nurses were initially reluctant to interview their residents, efforts will need to be made to encourage facilities to try the interview items and to monitor for facilities whose rates fall significantly below those seen nationally. We have created some training tapes and materials to aid in this effort.

Any effort to standardize data collection, whether on MDS 2.0 or MDS 3.0 will require accessible and available trainings and support materials. The gains from a well designed MDS 3.0 training extend beyond completing the form. Educating nurses on MDS 3.0 items will advance quality of care because the training emphasizes clinically relevant assessments and identifies effective approaches for NH staff to use when soliciting information from their residents. For example, we trained assessors to ensure that the resident could hear them. We encouraged them to try an external hearing amplifier if any question existed or the resident had decreased responsiveness. If they found that it helped with communication, they were to continue to use the amplifier[xx] for interviews. We asked them to note those cases where this device was used to facilitate interviews--10% of the NH residents in the national sample felt that it improved communication enough to use the device to complete the interviews. In the post-trial anonymous staff survey, 83% of respondents agreed that the hearing assistive device was useful for at least a few of their residents (4% disagreed).

The common-sense approach of making sure residents can hear has implications beyond MDS prevalence rates. To further illustrate this point: One of our gold-standard data collectors told us about one resident who was assumed to be non-communicative and severely cognitively impaired since her NH admission one year earlier. Once the resident put on the external hearing amplifier, she sat up, began to talk to the assessors, gave appropriate responses to questions, and pointed to corresponding answers on cue cards. As this example illustrates, training NH staff in how to communicate with residents has implications more far-reaching than even MDS improvements would indicate.

Increased Efficiency

Overall, MDS 3.0 is more efficient because it yields higher quality information for the time invested. Many of the study nurses specifically commented that the interview items saved them time.

In the national test, the MDS 3.0 took an average of 45% less time to complete than MDS 2.0. This significant gain was achieved through several types of revisions. Going directly to the resident does not just increase the accuracy of MDS items. It is also often more efficient. Many MDS 2.0 sections direct the assessor to review the record, talk to staff across all shifts, and talk to the resident or the family. Residents are mentioned as a data

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[xix] 73% of the facility nurses reported having received formal training on MDS 2.0 prior to this study. 33% had completed the AANAC credentialing program.

[xx] This inexpensive aid can be purchased on-line for less than $50.

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source, but they are only one source on a long list, and evidence suggests that they are not reliably included.

Those facilities that do attempt to include resident voice face different efficiency challenges. Feasible and tested interview items and protocols are not provided in MDS 2.0. The data collector must identify interview items often without information on their reliability or performance in NH populations. Once facilities identify an interview approach, they must create their own crosswalk to integrate the interview with the other data sources in order to code the MDS 2.0.

The failure to systematically include residents is problematic given that documentation of pain, mood, and preferences is often missing or inaccurate in the medical record, and the workload in facilities can make observing subtle signs and symptoms challenging. For cognitive assessment, mood, preferences, and pain, a simple resident interview that uses standardized items can be the sole information source for most residents, providing more accurate information directly and efficiently. Such tested items are now directly in the MDS 3.0. Responses can be entered and the item is complete. As part of the validation activity, we obtained start and stop times for expanded versions of the cognitive, mood and pain sections. The average time to complete these was 9.2 minutes. The final recommended cognitive and pain sections have fewer items.

For MDS 3.0 interview sections, accessing multiple data sources is only necessary for those residents who cannot complete a particular interview. This targeting approach maximizes efficiency. It may also improve the quality of assessments for non-responders since the time saved in interviews can be re-directed to systematic behavior observations and improving synthesis of multiple data sources. In addition, we have improved the content of the related observational items for several of these sections.

MDS 3.0 included other changes designed to improve efficiency. Our Technical Expert Panel recommended that MDS 3.0 be limited to items that would improve initial screening for common and often-missed geriatric conditions. MDS should not try to replace a comprehensive history and physical. Rather it should focus on creating more reliable and valid screening in key areas. They expressed the strong preference that other strategies such as RAPs or enhanced care plans be used to address limitations identified during MDS assessments. To the extent possible, we eliminated items that did not effectively screen for clinical symptoms and syndromes.

Other efforts to improve efficiency included testing a shorter look-back period than was used in prior versions. In addition, the form was redesigned for ease of use with larger fonts, logical page breaks, consistent patterns for response types, fewer items per page, and more instructions on the form itself rather than in a separate manual. The form was also designed to support the skip patterns. In separate usability testing of the form, *untrained* users adapted to the skip patterns within the first 2 assessment uses.

Time estimates showed more variation for MDS 2.0 than for MDS 3.0. Several factors likely contributed to variation in MDS 2.0 data collection times. Although most of the

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states in our study used the 1997 RUGs for quarterly reports, there was one state that used the full MDS while another used the abbreviated quarterly. All MDS 3.0 forms were full assessments[xxi], although we did not collect the section T items included only on 5 day assessments. The majority of facilities in our sample used soft-ware to "pre-populate" (fill in) MDS 2.0 assessments based on existing medical record face sheets and prior MDS 2.0 assessments.[xxii] However, not all facilities used this function and this ability to pre-populate was not available for MDS 3.0 items. The lack of clarity for some MDS 2.0 items and the greater number of items on the form may also contribute to the variation in MDS 2.0 times in that staff may have difficulty completing assessments on more complex residents with multiple conditions.

Program Function

The MDS has evolved from its primary legislative intent - to improve the quality of assessments - to serving other program functions. These programs include assigning payment and reporting quality of care measures. Improved accuracy of the items used to build these programs enhances the credibility of these uses and permits the programs to make more reliable comparisons of condition prevalence across facilities.

In eliminating items from MDS 2.0, we took care to provide equivalent items if the item was the basis for payment or publicly reported quality measures and a valid replacement could be created within the scope of MDS data collection. Some items that were candidates for deletion were retained in order to preserve program functions. The national evaluation collected MDS 2.0 and MDS 3.0 data on 3,258 residents. We implemented this design to permit specific comparison of the effects of changes on payment cells. These analyses showed that MDS 3.0 clinical assessment changes could be mapped into payment cells in a manner that avoided substantial shifts in payment assignment.

Although we were able to crosswalk most MDS 3.0 and MDS 2.0 items without significant shifts in payment, we could not completely do so for the treatment items. Unfortunately, we are unable to determine whether the significant shifts resulted from applying the recommendation to limit treatments to those given in-facility or from narrowing the look-back window. We were also unable to produce equivalent mapping for the therapies' look-back window. For these reasons, we did not include the changes to therapies and treatments in MDS 3.0. Instead, the recommended form, pending completion of the RUGs recalibration study, uses MDS 2.0 definitions for these items.

Changing from MDS 2.0 to MDS 3.0 will mean some loss of the ability to directly compare prevalence rates for some clinical conditions over time. This is often an issue faced by researchers and epidemiologists in deciding whether to update or improve any national data set. However, given the central role played by MDS in daily operations and

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[xxi] MDS 3.0 time estimates include all items tested in the field trial, some of which were dropped from the recommended form because they were study items only, had lower reliability or nurses reported difficulty with the item.

[xxii] Identifying information (name, date of birth, social security number, date of admission, etc) was collected in MDS 3.0 field trial forms for study tracking. However, this information was removed by facilities and our lead QIO before being sent for data entry.

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the frequency with which it is collected, the importance of accurate, more up-dated assessments would seem to outweigh the loss, particularly for items that are inaccurate or not relevant. All historical relevance is not lost, since the current revision represents an objective assessment of the body of evidence and science that has developed surrounding NH assessments, including that related to MDS 2.0. The MDS 3.0 national data collection was cross-sectional. The study did not include the longitudinal data collection needed to calculate change measures or baseline characteristics included in some quality measures

Finally, change, even in a positive direction, can be difficult and costly. The efficiency gains (better and more clinically useful assessments in less time) represented by MDS 3.0 may help offset these costs while improving resident care. Ultimate effects on care remain to be tested and providers are likely to need assistance, even with these improved items, in translating better assessments into improved care delivery.

Improvements in Staff Satisfaction and Perceptions of Clinical Utility

Provider attitudes are an important determinant of provider behavior. Negative provider attitudes toward MDS have been cited as an important barrier for creating accurate assessments that are incorporated into improved care. Therefore, the MDS 3.0 development included stakeholders throughout the revision. In addition, the national evaluation of MDS 3.0 included a phase in which the nurses who participated in the national test provided anonymous written feedback at the end of the field trial, comparing MDS 3.0 overall to MDS 2.0.

This survey showed that the gains in effectively capturing resident voice, improving accuracy, and increasing efficiency were associated with high levels of staff satisfaction. The nurses' feedback was overwhelmingly positive. For example, 81% said that MDS 3.0 was more clinically relevant; 85% felt that the new tool would help them identify problems that might not otherwise have been noticed, and 84% said that the structured interview sections (on cognition, mood, customary routine, activities, pain) improved their knowledge of residents' health conditions. Eighty-nine percent felt that the MDS 3.0 items allowed a more accurate report of a resident's characteristics, 79% thought that the revised tool better reflected best clinical practice or standards, and 85% found the MDS 3.0 questions more clearly worded. After the field trial, some facilities reported that they have voluntarily continued to collect many of the MDS 3.0 items because they felt the items helped them do a better job of assessment. This strong level of support was somewhat unexpected given the scope of changes and considering the fact that the nurses were experienced with MDS 2.0. They had presumably incorporated MDS 2.0 assessments into their routines and charting practices.

Conclusions

The strong results in the MDS 3.0 national trial reflect an iterative development process that not only built on over a decade of experience with MDS 2.0, but also incorporated new evidence, content expert insight, and rigorous VA HSR&D pilot work to test alternative items and responses for key MDS sections. We also rethought the length of

the clinical look-back windows and the form design to improve clarity and usability. CMS's decision to have the evaluation project invest in this development process allowed the national trial to include better developed items and format.

We recommend that the MDS 3.0 be implemented nationally to achieve the significant advances described above. The recommended final form is included in Chapter 1. In addition, item-by-item changes that we recommending are shown in Chapter 15, which includes a column briefly summarizing some of the rationale for the changes. All of our recommendations were guided by the principle that the MDS should be an effective and accurate initial screening tool, and that the items in the tool should be clearly linked to treatment decision and care. In key sections, we identified improved items for more reliable, accurate and valid assessment; overall we removed items that did not meet the definition of initial screening or would require significant restructuring to achieve an acceptable level of performance as a screening item.

Improvements incorporated in MDS 3.0 produced a more efficient assessment instrument: better quality information was obtained in less time. Resident interview items were directly included in this efficient assessment. Such gains should improve identification of resident needs and enhance resident-focused care planning. The improvements were associated with user perception that the MDS 3.0 improved clinical utility, relevance, ease of completion and clarity. In addition, inclusion of items recognized in other care settings is likely to enhance communication among providers. These significant gains reflect the cumulative effect of changes across the tool, including use of more valid items, direct inclusion of resident reports, improved clarity of retained items, deletion of poorly performing items, form redesign, and briefer assessment periods for clinical items.

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
A. Identification Information			
(A1) Facility Provider Numbers	AA6	Minor revision to item wording	Align with new identifiers
(A1a) National Provider Identifier		New item	Update to incorporate recent NPI implementation
(A1b) CMS Certification Number (CCN)	AA6b	Change to new CMS language	Number is distinguished from NPI
(A1c) State Provider Number	AA6a	Minor revision to item wording	Clarity
(A2) Legal name of resident	AA1	Minor revision to item wording	Clarity
(A2a) Resident First Name	A1a and AA1a	No changes	-
(A2b) Resident Middle Initial	A1b and AA1b	No changes	-
(A2c) Resident Last Name	A1c and AA1c	No changes	-
(A2d) Resident Name Suffix	A1d and AA1d	Minor revision to item wording	Clarity
(A3) Social Security and Medicare Numbers	AA5	No changes	-
(A3a) Social Security Number	AA5a	No changes	-
(A3b) Medicare number (or comparable number)	AA5b	No changes	-
(A4) Medicaid Number ("+" if pending, "N" if not a Medicaid recipient)	AA7	No changes	-
(A5) Gender	AA2	No changes	-
(A6) Birthdate	AA3	No changes	-
(A7) Race/Ethnicity	AA4	▪ Item wording changed per OMB standards ▪ Item and response categories changed per OMB standards ▪ Responses now allow check all that apply per OMB standards	Implement OMB standard
(A7a) American Indian or Alaska Native	AA4.1-AA4.5	See 3.0 item A7	See 3.0 item A7
(A7b) Asian	AA4.2	See 3.0 item A7	See 3.0 item A7

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
(A7c) Black or African American	AA4.3	▪ Codes Black and Hispanic origin separately and allows both	See 3.0 item A7
(A7d) Hispanic or Latino	AA4.4	See 3.0 item A7	See 3.0 item A7
(A7e) Native Hawaiian or Other Pacific Islander	AA42	See 3.0 item A7	See 3.0 item A7
(A7f) White	AA45	▪ Codes White and Hispanic origin separately and allows both	See 3.0 item A7
(A8) Language	A8a,b	Modified language item	See 3.0 items A8a and A8b
(A8a) Does the resident need or want an interpreter to communicate with a doctor or health care staff?	A8a,b	▪ Language item replaced with new item based on need for interpreter ▪ Unable to determine response added	▪ Focus item on identifying need ▪ NCQA standard item ▪ Unable to determine response added to facilitate electronic health records
(A8b) Preferred language	A8a,b	▪ Preferred language collected only if interpreter is needed ▪ Instruction includes sign language	▪ Translation services are based on resident's preferred language
(A9) Marital Status	A5	No changes	-
(A10) Type of Assessment/Tracking	A8	Response options modified	CMS program request
(A10a) Federal OBRA Reason for Assessment/Tracking	A8a	See 3.0 item A10	CMS program request
(A10b) PPS assessments	A8b	See 3.0 item A10	CMS program request
(A10c) PPS Other Medicare Required Assessment--OMRA	A8b response = 8	See 3.0 item A10	CMS program request
(A10d) PPS Swing Bed Clinical Change Assessment	A8b	▪ See 3.0 item A10 ▪ Include under off-cycle	CMS program request
(A11) Submission Requirement		New item	CMS program request
(A11a) Federal Required Assessment/Transaction		See 3.0 item A11	CMS program request
(A11b) State Required Assessment/Transaction		See 3.0 item A11	CMS program request
(A11c) Submission only required for other reasons (e.g. HMO, other insurance, etc.)		See 3.0 item A11	CMS program request

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
(A12) Preadmission Screening and Resident Review (PASRR)	AB9	Item revised: based on past Level II PASRR determination of mental illness or mental retardation	Item changed per CMS recommendations
(A13) Medicare Stay		New top-level item	Improve logical grouping of items
(A13a) Is the resident currently in a Medicare-covered stay?		New item	CMS program request
(A13b) Start of most recent Medicare Part A covered stay		New item	Dates on old form associated with coding error
(A13c) Medicare Part A HIPPS Code for Billing	T3a	New label	Clarity
(A14) State Case Mix Group	T3b	No changes	-
(A15) Optional Facility Items		New top-level item to group optional facility tracking items	No CMS purpose for data collection, but some facilities have requested to aid in tracking
(A15a) Medical Record Number	A6	Change to optional status	See 3.0 item A15
(A15b) Room number	A2	Change to optional status	No CMS purpose for data collection
(A15c) Name by which resident prefers to be addressed		New item	Providers have requested to aid in tracking residents who prefer to be called by a name other than their legal name (e.g. middle name, nickname).
(A15d) Lifetime occupation(s)	AB6	No changes	See 3.0 item A15
(A16) Assessment Reference Date	A3a	No changes	-
(A17) Entry date (date of this entry into facility)	AB1	▪ Item wording revised ▪ Replaces 'date of most recent entry'	▪ Clarity and CMS programming request ▪ Dates on old form subject to coding error; new item is more focused.
(A18) Type of Entry	AB5a	Item replaced	▪ CMS programming request ▪ "Prior stay" subject to confusion; new item is more focused.
(A19) Entered from	AB2	Item wording revised: ▪ Revised codes for 'community' ▪ Hospice added to list ▪ Label for rehabilitation hospital changed	▪ Ability of NH to accurately identify different types of community residences not clear ▪ Clarifies Inpatient Rehabilitation Facility (IRF)

Chapter 15: Summary of Item Changes and Rationale Table

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
(A20) Discharge Date (Complete if Item A13a=10 thru 13)	R4	No changes	-
(A21) Discharge status -- complete if Item A13a=10, 11, 12, 13	R3	Revised codes	Simplify and clarify coding
(A22) Signatures of persons completing the assessment	AD	No changes	-
(A23) Signature of RN Assessment Coordinator Verifying Completion	AD	No changes	-
	AB3	Item deleted	Variable interpretation. Item not needed for program; deleted to reduce form burden.
	AB4	Item deleted	Not needed for program function
	AB5	Item deleted	▪ Ability to accurately obtain 5 year history variable ▪ The MDS 3.0 TEP recommended that the MDS 3.0 be limited to items that would improve initial screening for common and often-missed geriatric syndromes or those need for program function. ▪ Not needed for program function
	AB5b	Item deleted	See 2.0 item AB5
	AB5c	Item deleted	See 2.0 item AB5
	AB5d	Item deleted	See 2.0 item AB5
	AB5e	Item deleted	See 2.0 item AB5
	AB5f	Item deleted	See 2.0 item AB5
	AB7	Item deleted	Item not needed for program function
	AB10	Item deleted	
	AB10a	Item deleted	
	AB10b	Item deleted	
	AB10c	Item deleted	
	AB10d	Item deleted	
	AB10e	Item deleted	

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
	AB10f	Item deleted	
	AB11	Item deleted	Not needed for program function
	A4a	Item deleted	Revised entry date definition makes unnecessary
	A7	Item deleted	Not needed for program function
	A7a	Item deleted	See 2.0 item A7
	A7b	Item deleted	See 2.0 item A7
	A7c	Item deleted	See 2.0 item A7
	A7d	Item deleted	See 2.0 item A7
	A7e	Item deleted	See 2.0 item A7
	A7f	Item deleted	See 2.0 item A7
	A7g	Item deleted	See 2.0 item A7
	A7h	Item deleted	See 2.0 item A7
	A7i	Item deleted	See 2.0 item A7
	A7j	Item deleted	See 2.0 item A7
	A9	Item deleted	▪ Documented inconsistencies between medical record and MDS. ▪ Definitions and terminology vary by state. ▪ Item not needed for program function. ▪ Deleted to reduce form burden. ▪ Providers objected to item ▪ No evidence that this item prompted or improved planning or discussion.
	A9a	Item deleted	See 2.0 item A9
	A9b	Item deleted	See 2.0 item A9
	A9c	Item deleted	See 2.0 item A9
	A9d	Item deleted	See 2.0 item A9
	A9e	Item deleted	See 2.0 item A9
	A9f	Item deleted	See 2.0 item A9
	A9g	Item deleted	See 2.0 item A9

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
	A10	Item deleted	▪ Documented inconsistencies between medical record and MDS. ▪ Not reliable source for clinical action. ▪ Active orders placed in other places in record. ▪ More useful as a required item in transfer documents that provide status prior to transfer. ▪ Deleted to reduce form burden. ▪ No evidence that this item prompted or improved planning or discussion. Recommended for decision support tools such as goals of care RAP.
	A10a	Item deleted	See 2.0 item A10
	A10b	Item deleted	See 2.0 item A10
	A10c	Item deleted	See 2.0 item A10
	A10d	Item deleted	See 2.0 item A10
	A10e	Item deleted	See 2.0 item A10
	A10f	Item deleted	See 2.0 item A10 ▪ response non-specific
	A10g	Item deleted	See 2.0 item A10 ▪ response non-specific
	A10h	Item deleted	See 2.0 item A10 ▪ response non-specific
	A10i	Item deleted	See 2.0 item A10

Chapter 15: Summary of Item Changes and Rationale Table

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
B. Hearing, Speech, Vision			
(B1) Comatose	B1	Look-back period changed to 5 days	
(B2) Hearing	C1	Minor revision to: ▪ Response option 2 reworded ▪ Definition from instructions added to response labels ▪ Look-back period changed to 5 days	▪ Clarify categories ▪ Internally consistent scale labels
(B3) Hearing Aid	C2a	Item intent changed: ▪ New item assesses 'hearing aid use during hearing assessment' (no longer 'hearing aid used in general') ▪ Look-back period changed to 5 days	▪ Increase utility and reliability by anchoring device to ability to hear assessment ▪ Change from checklist to the Y/N format preferred by standardized nomenclature consultant ▪ Emphasizes if device used to achieve reported function in 3.0 item B2
(B4) Speech Clarity	C5	▪ Minor revision to wording ▪ Instructions added to label ▪ Look-back period changed to 5 days	Clarity
(B5) Makes Self Understood	C4	▪ Minor revision to wording ▪ Definitions from instructions added to response labels ▪ Instructions no longer define language difference as "inability to make self understood" ▪ Look-back period changed to 5 days	▪ Label clarifies meaning ▪ Label for "usually understood" reminds assessor that he or she should allow time for response and prompts ▪ Response label includes instruction language that emphasizes prompting and time to express ▪ Resident should not be labeled "unable" because of language barriers. Need for interpreter captured elsewhere

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
(B6) Ability to Understand Others	C6	▪ Minor revision to wording ▪ Some instruction language added to label ▪ Instructions updated to exclude language differences ▪ Look-back period changed to 5 days	▪ Label includes hearing-aid device to prompt to consider hearing ▪ Clarifying language from instructions added to "usually" response ▪ Resident should not be labeled "unable" because of language barriers. Need for interpreter captured elsewhere
(B7) Vision	D1	Look-back period changed to 5 days	
(B8) Corrective Lenses	D3	Item intent changed: ▪ Item assesses 'corrective lenses use in vision assessment' (no longer 'corrective lenses used in general') ▪ Look-back period changed to 5 days	▪ Increase utility and reliability by anchoring item to vision ability assessment ▪ Emphasizes if device used to achieve reported function in 3.0 item B7
	C2b	Item deleted	Assessment of need for, adequacy and use of hearing aid is a next-level assessment to follow identification of hearing limitation. The MDS 3.0 TEP recommended that the MDS 3.0 be limited to items that would improve initial screening for common and often-missed geriatric syndromes. Other strategies or approaches would be employed to address limitations identified in the MDS screening.
	C2c	Item deleted	The MDS 3.0 TEP recommended that the MDS 3.0 be limited to items that would improve initial screening for common and often-missed geriatric syndromes. Other strategies or approaches would be employed to address limitations identified in the MDS screening.
	C2d	Item deleted	See 2.0 item C2c

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
	C3	Item deleted	See 2.0 item C2c
	C3a	Item deleted	See 2.0 item C2c
	C3b	Item deleted	See 2.0 item C2c
	C3c	Item deleted	See 2.0 item C2c
	C3d	Item deleted	See 2.0 item C2c
	C3e	Item deleted	See 2.0 item C2c
	C3f	Item deleted	See 2.0 item C2c
	C3g	Item deleted	See 2.0 item C2c
	C7	Item deleted	The MDS 3.0 TEP recommended that the MDS 3.0 be limited to items that would improve initial screening for common and often-missed geriatric syndromes. Other strategies or approaches would be employed to address limitations identified in the MDS screening.
	D2	Item deleted	The MDS 3.0 TEP recommended that the MDS 3.0 be limited to items that would improve initial screening for common and often-missed geriatric syndromes. Other strategies or approaches would be employed to address limitations identified in the MDS screening.
	D2a	Item deleted	▪ See 2.0 item D2 ▪ Item combined multiple deficits not necessarily related to side vision problem
	D2b	Item deleted	▪ See 2.0 item D2 ▪ Item combined multiple unrelated deficits and did not trigger additional evaluation.
	D2c	Item deleted	See 2.0 item D2

Chapter 15: Summary of Item Changes and Rationale Table

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
C. Cognitive Patterns (Also see Chapter 5)			
(C1) Should Brief Interview for Mental Status be conducted?		New item	Skip prompt to guide assessor to attempt item with all communicative residents.
(C2) Repetition of Three Words		▪ New interview for mental status replaces staff assessment for residents who can be interviewed ▪ Interview on ARD or on day before or day after	▪ Performance-based assessment preferred for the majority of residents who can participate ▪ Providers express discomfort with observation-based scoring for 2.0 items ▪ 2.0 Items "long term memory OK" and "short term memory OK" items are not recognized by most clinicians ▪ 2.0 section instructs staff to use a formal assessment, but does not provide assessment or crosswalk from standard assessment to 2.0 ▪ 2.0 CPS and COGs scales are not readily completed by NH staff ▪ New MDS 3.0 structured assessment found easier by staff ▪ Staff reported improved detection of cognitive impairment using MDS 3.0 structured assessment ▪ New structured assessment showed higher validity when compared to gold-standard instrument (3MS) ▪ New items directly test domains common to most cognitive tests in other settings –registration, temporal orientation, recall ▪ Structured cognitive assessment is an essential foundation for improved delirium assessment ▪ C2 tests attention and encoding

Chapter 15: Summary of Item Changes and Rationale Table

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
(C3a) Temporal Orientation: year		See 3.0 item C2 Allows partial credit for "close" responses	▪ See 3.0 item C2 ▪ Temporal orientation is common to many cognitive assessments
(C3b) Temporal Orientation: month		See items 3.0 items C2 & C3a	See 3.0 items C2 & C3a
(C3c) Temporal Orientation: day of the week		See item 3.0 item C2	See 3.0 items C2 & C3a
(C4a) Recall: sock		▪ See item 3.0 item C2 ▪ Tests if prompting aids recall	▪ See 3.0 item C2 ▪ Recall is common to many cognitive assessments ▪ Ability to recall with prompting is important information for care planning
(C4b) Recall: blue		See 3.0 items C2 & C4a	▪ See 3.0 item C2 ▪ Recall is common to many cognitive assessments ▪ Ability to recall with prompting is important information for care planning
(C4c) Recall: bed		See 3.0 items C2 & C4a	▪ See 3.0 item C2 ▪ Recall is common to many cognitive assessments ▪ Ability to recall with prompting is important information for care planning
(C5) Summary score		▪ Sum of response values 3.0 items C2 - C4c allows staff to generate a summary score	▪ Staff able to sum ▪ Summary score (0-15) is highly correlated with gold-standard score
(C6) Should the Staff Assessment for Mental Status be conducted?		See 3.0 item C2 ▪ Subjective Assessment (C7-C10) only completed in residents who could not complete BIMS	▪ Assist staff with skip pattern ▪ Objective preferred over subjective ▪ Subjective retained to allow cognitive report on the minority of residents who cannot complete BIMS
(C7) Short Term Memory OK	B2a	▪ Item only completed for residents unable to be tested with C2-C6 ▪ Look-back changed to 5 days	See 3.0 item C2
(C8) Long Term Memory OK	B2b	See 3.0 item C7	See 3.0 item C2
(C9) Memory/Recall Ability	B3	See 3.0 item C7	See 3.0 item C2

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
(C9a) Recalls current season	B3a	See 3.0 item C7	See 3.0 item C2
(C9b) Recalls location of own room	B3b	See 3.0 item C7	See 3.0 item C2
(C9c) Recalls staff names and faces	B3c	See 3.0 item C7	See 3.0 item C2
(C9d) Recalls that s/he in a nursing home	B3d	See 3.0 item C7	See 3.0 item C2
(C9e) Recalls none of the above	B3e	See 3.0 item C7	See 3.0 item C2
(C10) Cognitive Skills for Daily Decision Making	B4	See 3.0 item C7	See 3.0 item C2
(C11) Signs and Symptoms of Delirium	B5	Replaces "Delirium Assessment" from MDS 2.0 with new items based on "Confusion Assessment Method" (CAM)	▪ Confusion Assessment Method (CAM) is preferred over MDS 2.0 delirium item ▪ Independent evaluations show significant and consistent under-detection with unstructured observation using 2.0 items ▪ 2.0 delirium section reliability in some studies worse than chance ▪ CAM validity is well established ▪ CAM is based on DSM criteria ▪ CAM is cited as appropriate tool by several national and international authorities ▪ CAM is used to identify possible delirium in hospitalized older adults ▪ CAM showed improved reliability over MDS 2.0 items when scored after completion of structured testing in C2-C5
(C11a) Delirium: Inattention	B5a	See 3.0 item C11	See 3.0 item C11
(C11b) Delirium: Disorganized Thinking	B5c	See 3.0 item C11	See 3.0 item C11
(C11c) Delirium: Altered level of Consciousness		See 3.0 item C11	See 3.0 item C11
(C11d) Delirium: Psychomotor retardation	B5e	See 3.0 item C11	See 3.0 item C11
(C12) Acute Onset Mental Status Change		New item replaces "change in cognitive status" ▪ assesses 'change' instead of 'improvement or deterioration' ▪ change in look-back from 90 to 5 days	▪ Change from baseline is an element of CAM ▪ Look-back identified as most reliable and feasible for NH staff; agreed to in discussions with developer

Chapter 15: Summary of Item Changes and Rationale Table

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
	B5b	Item deleted	See 3.0 item C11
	B5d	Item deleted	See 3.0 item C11
	B5f	Item replaced with fluctuation response in items C11a-d	See 3.0 item C11
	B6	Item deleted	See 3.0 items C11 & C12

Chapter 15: Summary of Item Changes and Rationale Table

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
D. Mood (Also see Chapter 6)			
(D1) Should Resident Mood Interview be conducted?		New item	Skip prompt to guide assessor to attempt item with all communicative residents
(D2aI) Little interest in doing things--presence		▪ PHQ-9 interview for mood replaces observational staff assessment for residents who can be interviewed. ▪ Resident self-report preferred over staff behavioral assessment ▪ Look-back window changed to last 14 days (from 30)	▪ PHQ-9 validity well established in other settings ▪ PHQ-9 is based on DSM-IV criteria ▪ PHQ-9 has increasing use and recognition by clinicians ▪ PHQ-9 provides simple severity scoring that can track change over time ▪ PHQ-9 has been used in outpatient elders, hospital, rehabilitation (post stroke) and home health populations in addition to younger adult populations ▪ The majority of residents were able to complete PHQ-9 ▪ PHQ-9 has been shown to have higher validity (correlation with gold standard) in national Nursing Home sample than 2.0 items ▪ NH Staff who tried PHQ-9 reported improved utility and detection ▪ 2.0 items have poor correspondence with independent mood assessments and do not comport with accepted standard of self-report ▪ To complete correctly, 2.0 item required systematic observations of all residents across all shifts, which was difficult to achieve. ▪ 2.0 item had questionable utility for gauging response to treatment, since appropriate approach is targeting DSM-IV signs and symptoms
(D2aII) Little interest in doing things--frequency		See 3.0 item D2aI	See 3.0 item D2aI
(D2bI) Feeling down, depressed or hopeless--presence		See 3.0 item D2aI	See 3.0 item D2aI
(D2bII) Feeling down, depressed--frequency		See 3.0 item D2aI	See 3.0 item D2aI

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
(D2cI) Trouble sleeping or sleeping too much--presence		See 3.0 item D2aI	See 3.0 item D2aI
(D2cII) Trouble sleeping--frequency		See 3.0 item D2aI	See 3.0 item D2aI
(D2dI) Feeling tired--presence		See 3.0 item D2aI	See 3.0 item D2aI
(D2dII) Feeling tired--frequency		See 3.0 item D2aI	See 3.0 item D2aI
(D2eI) Poor appetite--presence		See 3.0 item D2aI	See 3.0 item D2aI
(D2eII) Poor appetite--frequency		See 3.0 item D2aI	See 3.0 item D2aI
(D2fI) Feeling bad about yourself--presence		See 3.0 item D2aI	See 3.0 item D2aI
(D2fII) Feeling bad about yourself--frequency		See 3.0 item D2aI	See 3.0 item D2aI
(D2gI) Trouble concentrating--presence		See 3.0 item D2aI	See 3.0 item D2aI
(D2gII) Trouble concentrating --frequency		See 3.0 item D2aI	See 3.0 item D2aI
(D2hI) Moving or speaking slowly--presence		See 3.0 item D2aI	See 3.0 item D2aI
(D2hII) Moving or speaking slowly--frequency		See 3.0 item D2aI	See 3.0 item D2aI
(D2iI) Thoughts of death--presence		See 3.0 item D2aI	See 3.0 item D2aI
(D2iII) Thoughts of death--frequency		See 3.0 item D2aI	See 3.0 item D2aI
(D3) Total Severity Score		▪ Staff adds severity scores on form to obtain total severity score	▪ Severity score is a validated indicator of mood severity and for tracking change over time
(D4) Should the Staff Assessment of Mood be conducted?		New item--skip prompt to guide assessor that if resident interview completed, staff assessment is not collected	▪ Resident-interview is preferred and standard source for all residents capable of communication and who can complete the interview ▪ Limiting observation to those who can't complete the interview improves feasibility by focusing staff observations on this group

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
(D5aI) Little interest in doing things--presence		▪ PHQ-9 Observational version (PHQ-9 OV) is the staff assessment for residents who cannot be interviewed ▪ Completed only for residents unable to be assessed with interview PHQ-9 (D1-D3) ▪ Modified, observational version of PHQ-9 developed and tested for residents who cannot communicate or are unable to complete PHQ-9	▪ PHQ-9 OV has higher validity (correlation with gold standard) in national Nursing Home sample than 2.0 items ▪ In pilot test PHQ-9 OV, was also more valid and correlated with resident report when collected in same sample ▪ Staff who used PHQ9-OV found these observation items easier than 2.0 and felt that they would improve detection and communication ▪ Includes irritability item as an observable behavior not seen in PHQ-9 ▪ Reviewed with and approved by developer ▪ See other reasons for change listed in D2aI
(D5aII) Little interest in doing things--frequency		See 3.0 item D5aI	See 3.0 items D4 & D5aI
(D5bI) Feeling or appearing down, depressed or hopeless--presence		See 3.0 item D5aI	See 3.0 items D4 & D5aI
(D5bII) Feeling or appearing down, depressed or hopeless--frequency		See 3.0 item D5aI	See 3.0 items D4 & D5aI
(D5cI) Trouble sleeping or sleeping too much--presence		See 3.0 item D5aI	See 3.0 items D4 & D5aI
(D5cII) Trouble sleeping--frequency		See 3.0 item D5aI	See 3.0 items D4 & D5aI
(D5dI) Feeling tired--presence		See 3.0 item D5aI	See 3.0 items D4 & D5aI
(D5dII) Feeling tired--frequency		See 3.0 item D5aI	See 3.0 items D4 & D5aI
(D5eI) Poor appetite--presence		See 3.0 item D5aI	See 3.0 items D4 & D5aI
(D5eII) Poor appetite--frequency		See 3.0 item D5aI	See 3.0 items D4 & D5aI
(D5fI) Indicating that s/he feels bad about self--presence		See 3.0 item D5aI	See 3.0 items D4 & D5aI
(D5fII) Indicating that s/he feels bad about self-frequency		See 3.0 item D5aI	See 3.0 items D4 & D5aI

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
(D5gI) Trouble concentrating--presence		See 3.0 item D5aI	See 3.0 items D4 & D5aI
(D5gII) Trouble concentrating -- frequency		See 3.0 item D5aI	See 3.0 items D4 & D5aI
(D5hI) Moving or speaking slowly-- presence		See 3.0 item D5aI	See 3.0 items D4 & D5aI
(D5hII) Moving or speaking slowly-- frequency		See 3.0 item D5aI	See 3.0 items D4 & D5aI
(D5iI) States that life isn't worth living...--presence		See 3.0 item D5aI	See 3.0 items D4 & D5aI
(D5iII) States that life isn't worth living...-- frequency		See 3.0 item D5aI	See 3.0 items D4 & D5aI
(D5ii) checkbox for suicidality		See 3.0 item D5aI	See 3.0 items D4 & D5aI
(D5jI) Being short tempered, easily annoyed		See 3.0 item D5aI	See 3.0 items D4 & D5aI
(D5jII) Being short tempered - freq		See 3.0 item D5aI	See 3.0 items D4 & D5aI
(D6) Total Severity Score		▪ See 3.0 item D5aI ▪ Summary score range 0-30	▪ See 3.0 item D5aI ▪ Staff can readily score on MDS form
	E1a	Item deleted	▪ See 3.0 items D2aI, D4 & D5 ▪ Replaced with PHQ-9 (resident or staff interview)
	E1b	Item deleted	▪ See 3.0 items D2aI, D4 & D5 ▪ Replaced with PHQ-9 (resident or staff interview)
	E1c	Item deleted	▪ See 3.0 items D2aI, D4 & D5 ▪ Replaced with PHQ-9 (resident or staff interview)
	E1d	Item deleted	▪ See 3.0 items D2aI, D4 & D5 ▪ Replaced with PHQ-9 (resident or staff interview)
	E1e	Item deleted	▪ See 3.0 items D2aI, D4 & D5 ▪ Replaced with PHQ-9 (resident or staff interview)
	E1f	Item deleted	▪ See 3.0 items D2aI, D4 & D5 ▪ Replaced with PHQ-9 (resident or staff interview)
	E1g	Item deleted	▪ See 3.0 items D2aI, D4 & D5 ▪ Replaced with PHQ-9 (resident or staff interview)

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
	E1h	Item deleted	▪ See 3.0 items D2al, D4 & D5 ▪ Replaced with PHQ-9 (resident or staff interview)
	E1i	Item deleted	▪ See 3.0 items D2al, D4 & D5 ▪ Replaced with PHQ-9 (resident or staff interview)
	E1j	Item deleted	▪ See 3.0 items D2al, D4 & D5 ▪ Replaced with PHQ-9 (resident or staff interview)
	E1k	Item deleted	▪ See 3.0 items D2al, D4 & D5 ▪ Replaced with PHQ-9 (resident or staff interview)
	E1l	Item deleted	▪ See 3.0 items D2al, D4 & D5 ▪ Replaced with PHQ-9 (resident or staff interview)
	E1m	Item deleted	▪ See 3.0 items D2al, D4 & D5 ▪ Replaced with PHQ-9 (resident or staff interview)
	E1n	Item deleted	▪ See 3.0 items D2al, D4 & D5 ▪ Replaced with PHQ-9 (resident or staff interview)
	E1o	Item deleted	▪ See 3.0 items D2al, D4 & D5 ▪ Replaced with PHQ-9 (resident or staff interview)
	E1p	Item deleted	▪ See 3.0 items D2al, D4 & D5 ▪ Replaced with PHQ-9 (resident or staff interview)
	E2	Item deleted	▪ See 3.0 items D2al, D4 & D5 ▪ Replaced with PHQ-9 (resident or staff interview)
	E3	Item deleted	▪ See 3.0 items D2al, D4 & D5 ▪ Replaced with PHQ-9 (resident or staff interview)

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
E. Behavior (Also see Chapter 7)			
(E1) Psychosis	J1i	▪ Hallucinations and Delusions moved from checklist in health conditions ▪ Illusions accounted for ▪ Item definitions added to labels ▪ Look-back changed to 5 days	▪ Improve clarity & reliability ▪ Content experts recommended accounting for illusions on form to facilitate coding and improve reliability
(E1a) Hallucinations or illusions	J1i	See 3.0 item E1	See 3.0 item E1
(E1b) Delusions	J1e	See 3.0 item E1	See 3.0 item E1
(E1c) None of the above		See 3.0 item E1	See 3.0 item E1
(E2) Behavioral Symptom--Presence & frequency	E4	▪ Labels significantly revised ▪ New item groupings ▪ Simplified frequency categories to those needed for program function (from 4 to 3) ▪ Replaced alterability with impact on resident and facility items ▪ Look-back changed to 5 days	▪ MDS 2.0 item groupings were not consistent with recognized factors ▪ MDS 2.0 item behavior item labels were viewed as pejorative by consumers, did not convey potential expression of unmet need ▪ "Alterability" was used variability across clinicians ▪ MDS 3.0 revised item groupings to improve clarity and facilitate accurate coding ▪ MDS 3.0 labels were Workgroup-developed to be acceptable to providers and consumers ▪ New specific impact items give insight into severity and potential need for treatment/intervention ▪ New item groupings more internally consistent and match clinical construct ▪ Simplified frequency categories decrease burden and improve agreement ▪ NH staff who used revised categories rated them as improved and easy to complete accurately
(E2a) Physical behavioral symptoms directed toward others	E4cA	See 3.0 item E2	See 3.0 item E2

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
(E2b) Verbal behavioral symptoms directed toward others	E4bA	See 3.0 item E2	See 3.0 item E2
(E2c) Other behavioral symptoms not directed toward others	E4dA	See 3.0 item E2	See 3.0 item E2
(E3) Overall presence of behavioral symptoms		New item	Skip prompt to improve form efficiency
(E4) Impact on Resident		▪ Replaces alterability items ▪ Refocuses assessment to clinical significance of behavior to resident's safety, ability to receive care and participation in activities ▪ Look-back changed to 5 days	▪ Alterability replaced due to variation in interpretation ▪ Provides more clinically relevant assessment of the effects of behavior ▪ NH staff who used the impact categories rated them useful and important ▪ Reliability for rating was high
(E4a) symptoms…put resident at risk for illness or injury		See 3.0 item E4	See 3.0 item E4
(E4b) symptoms… interfere with care		See 3.0 item E4	See 3.0 item E4
(E4c) symptoms… interfere with activities or social interaction		See 3.0 item E4	See 3.0 item E4
(E5) Impact on Others		▪ Replaces alterability items ▪ Refocuses assessment to clinical significance in care environment such as placing others at risk, intruding on privacy, disrupt care	▪ Staff varied widely in definition of "alterability" ▪ Alterability does not distinguish ongoing behaviors that require intervention ▪ Provides more clinically relevant assessment of the effects of behavior
(E5a) symptoms…put others at risk of injury		See 3.0 item E5	See 3.0 item E5
(E5b) symptoms… intrude on privacy of others		See 3.0 item E5	See 3.0 item E5
(E5c) symptoms… disrupt care or environment		See 3.0 item E5	See 3.0 item E5

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
(E6) Rejection of care -- presence & frequency	E4eA	▪ Label definition significantly revised ▪ Simplified frequency categories ▪ Focuses question on rejecting goal-directed care ▪ Removes goal-driven refusals and preferences from item ▪ Look-back changed to 5 days	▪ Label definition significantly revised to improve clarity, coding reliability and avoid pejorative label ▪ Workgroup developed to be acceptable to providers and consumers ▪ Simplified frequency categories to those needed for program function for decreased burden
(E7) Wandering -- presence & frequency	E4aA	▪ Wandering removed from Behavioral Symptoms list ▪ Simplified frequency categories to those needed for program function ▪ Look-back changed to 5 days	▪ Emphasizes that wandering differs from other behavior symptoms in source, evaluation and management ▪ Simplified frequency categories to those needed for program function for decreased data reporting burden
(E8) Wandering--Impact		▪ New item ▪ Replaces alterability item	▪ Staff varied widely in definition of "alterability" ▪ Alterability is not always the most relevant next-step assessment for wandering ▪ Provides more clinically relevant assessment of the effects of behavior
(E8a) …Wandering place the resident at significant risk of getting to a potentially dangerous place		See 3.0 item E8	See 3.0 item E8
(E8b) …wandering significantly intrude on the privacy or activities of others		See 3.0 item E8	See 3.0 item E8
(E9) Change in behavioral or other symptoms	E5	Item wording revised	Clarity
	E4aB	Item deleted	See 3.0 item E8
	E4bB	Item deleted	See 3.0 item E4
	E4cB	Item deleted	See 3.0 item E4
	E4dB	Item deleted	See 3.0 item E4
	E4eB	Item deleted	See 3.0 item E4

Chapter 15: Summary of Item Changes and Rationale Table

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
F. Preferences for Customary Routine & Activities (Also see Chapter 8)			
(F1) Should Interview for Daily and Activity Preferences be conducted?		New item	▪ Skip prompt to guide assessor to attempt item with all communicative residents ▪ Resident's voice is primary source for understanding preferences ▪ Unlike other interview items, allows proxy respondent if resident unable to complete ▪ Majority of resident were able to complete
(F2) Interview for Daily Preferences		▪ New interview for daily preferences replaces customary routine ▪ Interview on ARD or day before or day after	▪ 2.0 items were not perceived as helping with care planning ▪ Routines over past year could be related to ability, illness, or access rather than to preferences ▪ TEP and Validation Panels both recommended changing to importance response scales ▪ New items are grounded in residential care quality and map to U Minnesota QoL domains ▪ New items focus on the resident as central to determining daily preferences and activities ▪ Reassess on all comprehensive assessments since testing in NHs showed change in preferences over time ▪ NH staff rated MDS 3.0 revisions more useful for care planning than old items
(F2a) ...how important is it to you to choose what clothes to wear?		See 3.0 item F2	See 3.0 item F2
(F2b) …how important is it to you to take care of your personal belongings or things?		See 3.0 item F2	See 3.0 item F2
(F2c) …how important is it to you to choose between a tub bath, shower, bed bath, or sponge bath?		See 3.0 item F2	See 3.0 item F2

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
(F2d) …how important is it to you to have snacks available between meals?		See 3.0 item F2	See 3.0 item F2
(F2e) … how important is it to you to choose your own bedtime?		See 3.0 item F2	See 3.0 item F2
(F2f) …how important is it to you to have your family or a close friend involved in discussions about your care?		See 3.0 item F2	See 3.0 item F2
(F2g) …how important is it to you to be able to use the phone in private?		See 3.0 item F2	See 3.0 item F2
(F2h) …how important is it to you to have a place to lock your things to keep them safe?		See 3.0 item F2	See 3.0 item F2
(F3) Interview for Activity Preferences		▪ New interview for activity preferences asks resident to indicate importance ▪ Interview on ARD or day before or day after	▪ See 3.0 item F2 ▪ Per recommendations of consumers, providers and researchers, items changed to obtain resident importance ratings for activities ▪ New items map to U Minnesota QoL domains
(F3a) …how important is it to you to have books, newspapers, and magazines to read?	N4e	See 3.0 item F3	See 3.0 item F2 & F3
(F3b) …how important is it to you to listen to music you like?	N4d	See 3.0 item F3	See 3.0 item F2 & F3
(F3c) …how important is it to you to be around animals such as pets?		See 3.0 item F3	See 3.0 item F2 & F3
(F3d) …how important is it to you to keep up with the news?		See 3.0 item F3	See 3.0 item F2 & F3
(F3e) …how important is it to you to do things with groups of people?	N4k	See 3.0 item F3	See 3.0 item F2 & F3
(F3f) …how important is it to you to do your favorite activities?		See 3.0 item F3	See 3.0 item F2 & F3

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
(F3g) …how important is it to you to go outside to get fresh air when the weather is good?	N4h	See 3.0 item F3	See 3.0 item F3
(F3h) …how important is it to you to participate in religious services or practices?	N4f	See 3.0 item F3	See 3.0 item F2 & F3
(F4) Daily and Activity Preferences Primary Respondent		New item	Records primary respondent for interview
(F5) Should the Staff Assessment of Daily and Activity Preferences be Conducted?		New item	▪ Skip prompt ▪ Self-report is preferred over observation ▪ Staff interview only required for residents who cannot communicate and whose proxies could not complete importance ratings ▪ Limiting observation to those who can't complete the interview improves feasibility by focusing staff observations on this group
(F6) Staff Assessment of Daily and Activity Preferences		▪ List of daily routines and activities that staff are asked to score as preferred based on resident's engagement and other observed behavioral responses ▪ Completed only for residents unable to be assessed with interview ▪ Look-back changed to 5 days	▪ Careful observations of resident's response to various routines and activities may be a behavioral indicator of preferences
(F6a) Choosing clothes		See 3.0 item F6	See 3.0 items F5 & F6
(F6b) Caring for personal belongings		See 3.0 item F6	See 3.0 items F5 & F6
(F6c) Receiving tub bath		See 3.0 item F6	See 3.0 items F5 & F6
(F6d) Receiving shower		See 3.0 item F6	See 3.0 items F5 & F6
(F6e) Receiving bed bath		See 3.0 item F6	See 3.0 items F5 & F6
(F6f) Receiving sponge bath		See 3.0 item F6	See 3.0 items F5 & F6
(F6g) Snacks between meals		See 3.0 item F6	See 3.0 items F5 & F6

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
(F6h) Staying up past 8PM		See 3.0 item F6	See 3.0 items F5 & F6
(F6i) Family involvement in care discussions		See 3.0 item F6	See 3.0 items F5 & F6
(F6j) Use of phone in private		See 3.0 item F6	See 3.0 items F5 & F6
(F6k) Place to lock personal belongings		See 3.0 item F6	See 3.0 items F5 & F6
(F6l) Reading books, newspapers, magazines	N4e	See 3.0 item F6	See 3.0 items F5 & F6
(F6m) Listening to music	N4d	See 3.0 item F6	See 3.0 items F5 & F6
(F6n) Being around animals		See 3.0 item F6	See 3.0 items F5 & F6
(F6o) Keeping up with the news		See 3.0 item F6	See 3.0 items F5 & F6
(F6p) Doing things in groups	N3	See 3.0 item F6	See 3.0 items F5 & F6
(F6q) Participating in favorite activities		See 3.0 item F6	See 3.0 items F5 & F6
(F6r) Spending time away from nursing home	N4g	See 3.0 item F6	See 3.0 items F5 & F6
(F6s) Spending time outdoors	N4h	See 3.0 item F6	See 3.0 items F5 & F6
(F6t) Participating in religious activities	N4f	See 3.0 item F6	See 3.0 items F5 & F6
(F6u) None of the above		See 3.0 item F6	See 3.0 items F5 & F6
	AC1a	Item deleted	▪ See 3.0 item F1, F2, F6 ▪ Replaced by preference assessment or staff assessment
	AC1b	Item deleted	▪ Topic not ranked as top priority for preference interview by validation panel
	AC1c	Item deleted	▪ Staff who tried related item with residents found was difficult for residents to answer
	AC1d	Item deleted	▪ See 3.0 item F1, F2, F6 ▪ Replaced by preference assessment or staff assessment
	AC1e	Item deleted	▪ See 3.0 item F1, F2, F6 ▪ Replaced by preference assessment or staff assessment
	AC1f	Item deleted	▪ Concepts addressed in other sections

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
	AC1g	Item deleted	▪ Current tobacco is obtained in J
	AC1h	Item deleted	▪ See 3.0 item F1, F2, F6 ▪ Replaced by preference assessment or staff assessment
	AC1i	Item deleted	▪ Dietary preferences required more detailed assessment for all residents than can be obtained in MDS
	AC1j	Item deleted	▪ See 3.0 item F1, F2, F6 ▪ Replaced by preference assessment or staff assessment
	AC1k	Item deleted	▪ Preference item was problematic in pilot and national testing
	AC1l	Item deleted	▪ See 3.0 item F1, F2, F6 ▪ Replaced by preference assessment or staff assessment
	AC1m	Item deleted	▪ See 3.0 item F1, F2, F6 ▪ Replaced by preference assessment or staff assessment
	AC1n	Item deleted	▪ Tracking of voiding patterns is 1st step in determining toileting trial
	AC1o	Item deleted	▪ Some concepts addressed in other sections
	AC1p	Item deleted	▪ See 3.0 item F1, F2, F6 ▪ Replaced by preference assessment or staff assessment
	AC1q	Item deleted	▪ See F1, F2, F6 ▪ Replaced by preference assessment or staff assessment ▪ In cognitive testing exact time less important than having flexibility when wanted and type
	AC1r	Item deleted	▪ See 3.0 item F1, F2, F6 ▪ Replaced by preference assessment or staff assessment
	AC1s	Item deleted	▪ See 3.0 item F1, F2, F6 ▪ Replaced by preference assessment or staff assessment
	AC1t	Item deleted	▪ See 3.0 item F1, F2, F6 ▪ Replaced by preference assessment or staff assessment
	AC1u	Item deleted	▪ See 3.0 item F1, F2, F6 ▪ Replaced by preference assessment or staff assessment

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
	AC1v	Item deleted	▪ See 3.0 item F1, F2, F6 ▪ Replaced by preference assessment or staff assessment
	AC1w	Item deleted	▪ See 3.0 item F1, F2, F6 ▪ Replaced by preference assessment or staff assessment
	AC1x	Item deleted	▪ See 3.0 item F1, F2, F6 ▪ Replaced by preference assessment or staff assessment
	AC1y	Item deleted	-
	F1a	Item deleted	▪ See 3.0 item F1, F2, F6 ▪ Replaced by preference assessment or staff assessment
	F1b	Item deleted	▪ See 3.0 item F1, F2, F6 ▪ Replaced by preference assessment or staff assessment
	F1c	Item deleted	▪ See 3.0 item F1, F2, F6 ▪ Replaced by preference assessment or staff assessment
	F1d	Item deleted	▪ See 3.0 item F1, F2, F6 ▪ Replaced by preference assessment or staff assessment
	F1e	Item deleted	▪ See 3.0 item F1, F2, F6 ▪ Replaced by preference assessment or staff assessment
	F1f	Item deleted	▪ See 3.0 item F1, F2, F6 ▪ Replaced by preference assessment or staff assessment
	F1g	Item deleted	▪ See 3.0 item F1, F2, F6 ▪ Replaced by preference assessment or staff assessment
	F1	Item deleted	▪ Some related concepts addressed in other sections ▪ Daily and activity preferences, depression, and behavior symptoms are screened for in other sections. Identification of contributions is a next-level assessment to follow identification of potential issues. MDS 3.0 TEP recommended that MDS focus on initial screen for geriatric syndromes and conditions ▪ Providers did not perceive as needing to have on form in order to care plan

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
	F2b	Item deleted	See MDS 2.0 deleted item F2
	F2a	Item deleted	See MDS 2.0 deleted item F2
	F2c	Item deleted	See MDS 2.0 deleted item F2
	F2d	Item deleted	See MDS 2.0 deleted item F2
	F2e	Item deleted	See MDS 2.0 deleted item F2
	F2f	Item deleted	See MDS 2.0 deleted item F2
	F2g	Item deleted	See MDS 2.0 deleted item F2
	F2h	Item deleted	See MDS 2.0 deleted item F2
	F3a	Item deleted	See MDS 2.0 deleted item F2
	F3b	Item deleted	See MDS 2.0 deleted item F2
	F3c	Item deleted	▪ See 3.0 item F1, F2, F6 ▪ Replaced by preference assessment or staff assessment ▪ Relates to important but can't do/no choice response
	F3d	Item deleted	-
	N1a	Item deleted	▪ Very low validity in other evaluations using interview or staff report ▪ PHQ-9 includes a sleep item
	N1b	Item deleted	See 2.0 item N1a
	N1c	Item deleted	See 2.0 item N1a
	N1d	Item deleted	See 2.0 item N1a
	N2	Item deleted	▪ See 3.0 item F1, F2, F6 ▪ Replaced by preference assessment or staff assessment
	N3a	Item deleted	▪ See 3.0 item F1, F2, F6 ▪ Replaced by preference assessment or staff assessment
	N3b	Item deleted	▪ See 3.0 item F1, F2, F6 ▪ Replaced by preference assessment or staff assessment
	N3c	Item deleted	▪ See 3.0 item F1, F2, F6 ▪ Replaced by preference assessment or staff assessment
	N3d	Item deleted	▪ See 3.0 item F1, F2, F6 ▪ Replaced by preference assessment or staff assessment
	N3e	Item deleted	▪ See 3.0 item F1, F2, F6 ▪ Replaced by preference assessment or staff assessment

Chapter 15: Summary of Item Changes and Rationale Table

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
	N4a	Item deleted	▪ See 3.0 item F1, F2, F6 ▪ Replaced by preference assessment or staff assessment
	N4b	Item deleted	▪ See 3.0 item F1, F2, F6 ▪ Replaced by preference assessment or staff assessment
	N4c	Item deleted	▪ See 3.0 item F1, F2, F6 ▪ Replaced by preference assessment or staff assessment
	N4i	Item deleted	▪ See 3.0 item F1, F2, F6 ▪ Replaced by preference assessment or staff assessment
	N4j	Item deleted	▪ See 3.0 item F1, F2, F6 ▪ Replaced by preference assessment or staff assessment
	N4l	Item deleted	▪ See 3.0 item F1, F2, F6 ▪ Replaced by preference assessment or staff assessment
	N4m	Item deleted	▪ See 3.0 item F1, F2, F6 ▪ Replaced by preference assessment or staff assessment
	N5a	Item deleted	▪ See 3.0 item F1, F2, F6 ▪ Replaced by preference assessment or staff assessment
	N5b	Item deleted	▪ See 3.0 item F1, F2, F6 ▪ Replaced by preference assessment or staff assessment

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
G. Functional Status (Also see Chapter 11)			

(G1) Activities of Daily Living Assistance	G1	▪ Response categories combine performance and support
		▪ Coding based on most dependent episode (MDS 2.0 support was rated based on most dependent but performance was based on typical)
		▪ New coding category for set-up assistance is distinguished from supervision
		▪ Look-back changed to 5 days
			▪ Combined performance and support rationale:
			  ○ Simplifies coding table
			  ○ Miscoding and poor reliability by external audit have been an ongoing limitation
			  ○ Descriptions to arrive at typical for column A have been confusing to staff and source of error
			  ○ Different anchors for columns A and B (A anchor = typical, B anchor = most dependent) are also confusing and source of error
			▪ Supervision requires that oversight or cuing be provided throughout activity
			▪ To avoid upward "creep" total dependence can only be selected if resident unable or unwilling to perform any part of activity
			▪ Kept basic items and response levels to allow crosswalk to RUGs and QMs
			▪ Staff noted section as improved
			▪ Reliabilities were high

(G1a) Bed Mobility	G1aA	See 3.0 item G1	See 3.0 item G1
(G1b) Transfer	G1b A	See 3.0 item G1	See 3.0 item G1
(G1c) Toilet transfer	G1iA	▪ See 3.0 item G1 ▪ Toilet transfer separated from toilet use	▪ See 3.0 item G1 ▪ Separation of toilet transfer and toileting aim to ease coding and make items align with preferred assessment by content experts in nursing homes and other settings ▪ Division is consistent with the way care is planned
(G1d) Toileting	G1iA	See 3.0 item G1	See 3.0 item G1
(G1e) Walk in room	G1cA	See 3.0 item G1	See 3.0 item G1
(G1f) Walk in facility	G1dA	▪ See 3.0 item G1 ▪ Walk in facility replaces walk in corridor	See 3.0 item G1

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
(G1g) Locomotion	G1eA and G1fA	▪ See 3.0 item G1 ▪ Single locomotion item now assesses locomotion in facility	▪ See 3.0 item G1 ▪ Definition of "unit" varies across facilities single category eases coding to focus on moving about facility
(G1h) Dressing upper body	G1gA	▪ See 3.0 item G1 ▪ Dressing upper body separated from dressing lower body	▪ See 3.0 item G1 ▪ Separation of upper body and lower body dressing aims to ease coding and align items with preferred assessment by content experts in nursing homes and other settings
(G1i) Dressing lower body	G1gA	▪ See 3.0 item G1 ▪ Dressing upper body separated from dressing lower body	See 3.0 items G1 & G1h
(G1j) Eating	G1hA	See 3.0 item G1	See 3.0 item G1
(G1k) Grooming/personal hygiene	G1jA	▪ See 3.0 item G1 ▪ Minor wording change on label	▪ See 3.0 item G1 ▪ Clarity
(G1l) Bathing	G2A	▪ See 3.0 item G1 ▪ Bathing moved to ADL list	Levels in old item not needed for program function. Providers felt easier to apply response scale for other ADLs
	G2B	Self-performance and support combined	Self-performance and support combined
(G2) Mobility Prior to Admission		New item	▪ Included at the request of STRIVE team ▪ Reliability (kappa) in good range
(G2a) Did resident have a hip fracture, hip replacement, or knee replacement…?		See 3.0 item G2	See 3.0 item G2
(G2b1) Was independent in transfer		See 3.0 item G2	See 3.0 item G2
(G2b2) Was independent walking across room		See 3.0 item G2	See 3.0 item G2
(G2b3) Was independent walking 1 block		See 3.0 item G2	See 3.0 item G2
(G2b4) Resident not independent in any of the above		See 3.0 item G2	See 3.0 item G2
(G2b5) Unable to determine		See 3.0 item G2	See 3.0 item G2

Chapter 15: Summary of Item Changes and Rationale Table

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
(G3) Balance During Transitions and Walking	G3a, G3b	▪ Focus balance assessment on transitions during activities with highest risk for falls ▪ Item revised ▪ Response options revised ▪ Look-back changed to 5 days	▪ PT and fall prevention experts felt that 2.0 balance items did not capture activities where assistance and support were most variable and failed to assess activities with highest risk for falls
(G3a) Balance while moving from seated to standing	G3a, G3b	See 3.0 item G3	See 3.0 item G3
(G3b) Balance while walking	J1n	See 3.0 item G3	▪ See 3.0 item G3 ▪ Remove from checklist to increase prominence
(G3c) Balance while turning around		See 3.0 item G3	See 3.0 item G3
(G3d) Balance while moving on and off toilet		See 3.0 item G3	See 3.0 item G3
(G3e) Balance during surface to surface transfer		See 3.0 item G3	See 3.0 item G3
(G4) Functional Limitation in Range of Motion	G4	▪ Collapsed into Upper Extremity and Lower Extremity ▪ Removed voluntary movement assessment ▪ Look-back changed to 5 days	▪ Decrease form reporting burden and simplify coding task ▪ Consolidation seen as improved by staff; reliability excellent
(G4a) Upper extremity	G4bA, G4cA	See 3.0 item G4	See 3.0 item G4
(G4b) Lower extremity	G4dA, G4eA	See 3.0 item G4	See 3.0 item G4
	G4aA	See 3.0 item G4	See 3.0 item G4

(G5) Mobility Devices	G5	▪ Stem changed from check "all that apply" to "all that were normally used"
		▪ Look-back changed to 5 days
			▪ Content experts recommended:
			  o Distinguishing cane/crutch vs. walker
			  o Consolidating wheelchair
			  o Addition of Lower Extremity prosthesis

(G5a) Cane/crutch	G5a	See 3.0 item G5	See 3.0 item G5
(G5b) Walker	G5a	▪ See 3.0 item G5 ▪ Walker separated from cane/crutch	See 3.0 item G5

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
(G5c) Wheelchair	G5b, G5c, G5d	▪ See 3.0 item G5 ▪ Wheelchair item eliminates distinction been wheeled self and other wheeled	See 3.0 item G5
(G5d) Lower extremity limb prosthesis		▪ See 3.0 item G5 ▪ Limb prosthesis added	See 3.0 item G5
(G5e) None of the above	g5e	See 3.0 item G5	See 3.0 item G5
(G6) Bedfast	G6a	▪ Listed as a separate item from transfers ▪ Definition added from instructions ▪ Response format changed from checklist to yes/no ▪ Look-back changed to 5 days	▪ Coding reliability and external audits in MDS 2.0 have been problematic. Providers have varied in interpretation ▪ Adding definition to label and changing format to Y/N intended to improve reliability, clarity and ease of coding for this QI
(G7) Functional Rehabilitation Potential	G8	▪ Response format changed from checklist to yes/no ▪ Look-back changed to 5 days	▪ Response format changed to that preferred by standardized terminology consultant to improve reliability
(G7a) Resident believes s/he capable of increased independence in at least some ADL's	G8a	Response format changed from checklist to yes/no	▪ Response format changed to that preferred by standardized terminology consultant to improve reliability
(G7b) Direct care staff believe resident is capable of increased independence in at least some ADL's	G8b	Response format changed from checklist to yes/no	▪ Response format changed to that preferred by standardized terminology consultant to improve reliability
	G1aB	Item deleted	Self-performance and support combined
	G1bB	Item deleted	Self-performance and support combined
	G1cB	Item deleted	Self-performance and support combined
	G1dB	Item deleted	Self-performance and support combined
	G1eB	Item deleted	Self-performance and support combined
	G1fB	Item deleted	Self-performance and support combined
	G1gB	Item deleted	Self-performance and support combined
	G1hB	Item deleted	Self-performance and support combined

Chapter 15: Summary of Item Changes and Rationale Table

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
	G1iB	Item deleted	Self-performance and support combined
	G1jB	Item deleted	Self-performance and support combined
	G4dB, G4eB	Item deleted	▪ Functional ability and balance captured elsewhere ▪ Not needed for program function
	G4bB, G4cB	Item deleted	▪ Functional ability and balance captured elsewhere ▪ Not needed for program function
	G4aB	Item deleted	▪ Functional ability and balance captured elsewhere ▪ Not needed for program function
	G4fB	Item deleted	▪ Functional ability and balance captured elsewhere ▪ Not needed for program function
	G6b	Item deleted	▪ Items not needed for program function ▪ Bedrail reporting relevant if it functions as a restraint--this is in restraint section
	G6c	Item deleted	▪ Items not needed for program function ▪ Use often determined by facility policy
	G6d	Item deleted	▪ Items not needed for program function ▪ Use often determined by facility policy
	G6e	Item deleted	▪ Items not needed for program function ▪ Use often determined by facility policy
	G6f	Item deleted	▪ Items not needed for program function
	G8c	Item deleted	▪ Subjective item eliminated to decrease form completion burden as item not needed for program function and no evidence has improved problem identification or care planning

Chapter 15: Summary of Item Changes and Rationale Table

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
	G8d	Item deleted	Eliminated to decrease form completion burden as item not needed for program function and no evidence has improved problem identification or care planning
	G8e	Item deleted	Remaining items changed to Yes/No
	G9	Item deleted	-

Chapter 15: Summary of Item Changes and Rationale Table

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
H. Bladder and Bowel (Also see Chapter 11)			
(H1) Urinary appliances	H3	Appliances separated from programs	Allow clarification of toileting programs
(H1a) Indwelling bladder catheter	H3d	Minor change to item label	Clarity
(H1b) External (condom) catheter	H3c	No changes	-
(H1c) Ostomy (suprapubic catheter, ileostomy)	H3i	Minor change to item label	Clarity
(H1d) Intermittent catheterization	H3e	Minor change to item label	Clarity
(H1e) None of the above	H3j	No changes	-
(H2) Urinary Toileting Program		▪ Major wording change to item and responses ▪ New items ask if attempted and includes brief definition, response to trial and whether on program ▪ Toileting program assessed separately from appliances ▪ Separate item for toileting trial and toileting program ▪ Trial look-back is since incontinence noticed ▪ Program look-back is 5 days	▪ Independent studies have documented significant validity problems with 2.0 toileting program item ▪ 2.0 item was frequently marked present without evidence of real program ▪ In 2.0 item, some staff interpret changing incontinence briefs as a program ▪ 2.0 item failed to identify those who had a trial, did not respond and therefore are not on a program ▪ Item rewritten to assist provider in seeing relevant care process underlying toilet program response. Also could allow rethinking of QI to consider cases where a non-responsive trial means that continued program is not mandatory
(H2a) Toileting program tried		See 3.0 item H2	See 3.0 item H2
(H2b) Response to toileting program		See 3.0 item H2	See 3.0 item H2
(H2c) Current toileting program	H3a	See 3.0 item H2	See 3.0 item H2

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
(H3) Urinary Continence	H1b	▪ Changes to item label ▪ Changes to response options ▪ Catheter no longer rated continent ▪ Look-back changed to 5 days	Response options modified to: ▪ Discontinue practice of incorrectly classifying catheter or ostomy as continent ▪ Simplify intermediate response categories where independent studies have shown difficulty in reliable classification
(H4) Bowel continence	H1a	▪ Changes to response options ▪ Ostomy no longer rated continent ▪ Eliminate "usual" response category ▪ Look-back changed to 5 days	Response options modified to: ▪ Discontinue practice of incorrectly classifying ostomy as continent ▪ Simplify intermediate response categories where independent studies have shown difficulty in reliable classification ▪ Elimination of "usually continent" avoids requiring distinction between "continent," "usually continent" and "occasionally continent"
(H5) Bowel Toileting Program		New item	Allow identification of residents on bowel toileting program
(H6) Constipation	H2b	▪ Change from item on checklist (all that apply) to separate yes/no item ▪ Look-back changed to 5 days	▪ Clarity ▪ Response format changed to that preferred by standardized terminology consultant to improve reliability ▪ Common side effect of medication and immobility, and sign of dehydration
	H2e	Item deleted	Eliminated because checklist removed
	H4	Item deleted	Eliminated because not needed for program function and no evidence improved assessment or care planning on MDS
	H2	Item reduced to only constipation subitem	Other subitems not needed for program function and no evidence they improved assessment or care planning on the MDS
	H3b	Item deleted	Included in program definition (new H2a-c)
	H3f	Item deleted	Not needed for program function and no evidence improved assessment or care

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
	H3g	Item deleted	Not needed for program function and no evidence improved assessment or care
	H3h	Item deleted	Included in new 3.0 item H5 if part of a scheduled bowel toileting program to manage bowel continence
	H2a	Item deleted	Eliminated because not needed for program function and no evidence improved assessment or care planning on MDS
	H2c	Item deleted	Eliminated because not needed for program function and no evidence improved assessment or care planning on MDS
	H2d	Item deleted	▪ Multiple content experts and our validation panel rated this item among the lowest in validity. The MDS is not a valid way to identify and measure this important marker of care. It is rarely documented on MDS. ▪ Detection problems: Inclusion of fecal impaction on MDS checklist has not appeared to improve surveillance. ▪ Human Behavior/Factors: Staff know this is a sentinel event so may not be motivated to look for cases to enter in MDS. ▪ MDS Methodology: This is an incident event on a prevalence form. The item addresses something that is not a patient characteristic, but rather an acute change or adverse event. The time intervals prescribed for MDS are a cross-sectional design. Sometimes this condition is picked up after the resident is transferred to the ED or hospital, but these are not data sources for the item. (Note MDS 2.0 prevalence in 14-day look-back in current sample was 9 out of 3244 cases, or 0.28%)

Chapter 15: Summary of Item Changes and Rationale Table

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
I. Active Disease Diagnosis			
Overall section		▪ Increased guidance (algorithims) in instructions for determining if disease is active ▪ Look-back window change from 7 days to active diseases in the last 30 days (UTI was already 30 days in 2.0) ▪ Diagnosis labels updated (clarifications added to form)	▪ Look-back for section modified to reflect typical charting practices for primary care providers whose documentation is part of requirement to identify active ▪ Labels throughout section are clarified and updated to include common terminology ▪ Some common diagnoses important for care planning and understanding other sections added ▪ Abbreviations commonly used by nurses added to parenthetical for condition
(I1) Cancer (with or without metastasis)	I1pp	▪ See overall section change	▪ See overall section rationale ▪ Clarity
(I2) Anemia	I1oo	▪ See overall section change	▪ See overall section change
(I3) Atrial Fibrillation and Other Dysrhythmias	I1e	▪ See overall section change	▪ See overall section rationale ▪ New item names a common dysrhythmia
(I4) Coronary Artery Disease (CAD) (includes angina, myocardial infarction, ASHD)	I1d	▪ See overall section change	▪ See overall section rationale ▪ Clarity ▪ Update
(I5) Deep Venous Thrombosis (DVT) /Pulmonary Embolus (PE or PTE)	I1g	▪ See overall section change ▪ Includes PE or PTE	▪ See overall section rationale
(I6) Heart Failure (includes CHF, pulmonary edema)	I1f	▪ See overall section change	▪ See overall section rationale ▪ Update
(I7) Hypertension	I1h	▪ See overall section change	▪ See overall section rationale
(I8) Peripheral vascular disease/Peripheral Arterial Disease	I1j	▪ See overall section change	▪ See overall section rationale ▪ Clarity
(I9) Cirrhosis		▪ See overall section change ▪ New item	▪ See overall section rationale ▪ Important for care planning
(I10) GERD/Ulcer (includes esophageal, gastric, and peptic ulcers)		▪ See description for overall section ▪ New item	▪ See overall section rationale ▪ Important for care planning

Chapter 15: Summary of Item Changes and Rationale Table

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
(I11) Ulcerative Colitis/ Chrohn's Disease/Inflammatory Bowel Disease		▪ See overall section change	▪ See overall section rationale ▪ Important for care planning
(I12) Benign Prostatic Hyperplasia (BPH)		▪ See overall section change ▪ New item	▪ See overall section rationale ▪ Important for care planning
(I13) Renal Insufficiency or Renal Failure (ESRD)	I1qq	▪ See overall section change	▪ See overall section rationale ▪ Broader diagnosis is important because of pharmacotherapy issues; specific definition in instructions
(I14) Human Immunodeficiency Virus (HIV) Infection (includes AIDS)	I2d	▪ See overall section change	▪ See overall section rationale ▪ Clarity
(I15) MRSA,VRE,Clostridium diff. Infection/Colonization	I2a and I2b	▪ See overall section change	▪ See overall section rationale ▪ Clarity
(I16) Pneumonia	I2e	▪ See overall section change	▪ See overall section rationale
(I17) Septicemia	I2g	▪ See overall section change	▪ See overall section rationale ▪ Item retained from 2.0 per CMM recommendation
(I18) Tuberculosis	I2i	▪ See overall section change	▪ See overall section rationale
(I19) Urinary tract infection (UTI)	I2j	▪ See overall section change. ▪ Definition made more specific with input from infectious disease expert at CDC.	▪ See overall section rationale
(I20) Viral Hepatitis (includes Hepatitis A, B, C, D, and E)	I2k	▪ See overall section change	▪ See overall section rationale ▪ Clarity
(I21) Wound Infection	I2l	▪ See overall section change	▪ See overall section rationale
(I22) Diabetes Mellitus (DM) (includes diabetic retinopathy, nephropathy, and neuropathy)	I1a, I1kk	▪ See overall section change	▪ See overall section rationale ▪ Clarity
(I23) Hyponatremia		▪ See overall section change ▪ New item	▪ See overall section rationale ▪ Important for care planning

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
(I24) Hyperkalemia		▪ See overall section change ▪ New item	▪ See overall section rationale ▪ Important for care planning
(I25) Hyperlipidemia		▪ See overall section change ▪ New item	▪ See overall section rationale ▪ Common condition; goal was to decrease use of "other"
(I26) Thyroid Disorder (includes hypothyroidism, hyperthyroidism, and Hashimoto's thyroiditis)	I1b, I1c	▪ See overall section change ▪ Items consolidated into general category	▪ See overall section rationale ▪ Clarity
(I27) Arthritis	I1l	▪ See overall section change	▪ See overall section change
(I28) Osteoporosis	I1o	▪ See overall section change	▪ See overall section change
(I29) Hip fracture	I1m	▪ See overall section change	▪ See overall section change
(I30) Other fracture	I1pp	▪ See overall section change	▪ See overall section change
(I31) Alzheimer's Disease	I1q	▪ See overall section change	▪ See overall section change
(I32) Aphasia	I1r	▪ See overall section change	▪ See overall section change
(I33) Cerebral Palsy	I1s	▪ See overall section change	▪ See overall section change
(I34) CVA/TIA/Stroke	I1t, I1bb	▪ See overall section change ▪ Items consolidated into expanded category	▪ See overall section change
(I35) Dementia (non-Alzheimer's dementia, includes Parkinson's, Huntington's, Pick's, or Creutzfeldt-Jacob diseases)	I1u	▪ See overall section change	▪ See overall section rationale ▪ Clarity
(I36) Hemiplegia/ Hemiparesis/ Paraplegia	I1v, I1x	▪ See overall section change ▪ Items consolidated into single category	▪ See overall section rationale ▪ Function captured elsewhere
(I37) Quadriplegia	I1z	▪ See overall section change	▪ See overall section rationale
(I38) Multiple Sclerosis	I1w	▪ See overall section change	▪ See overall section rationale
(I39) Parkinson's Disease	I1y	▪ See overall section change	▪ See overall section rationale

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
(I40) Seizure Disorder	I1aa	▪ See overall section change	▪ See overall section rationale
(I41) Traumatic Brain Injury	I1cc	▪ See overall section change	▪ See overall section rationale
(I42) Malnutrition (protein or calorie) or at risk for malnutrition		▪ See overall section change ▪ New item	▪ See overall section rationale ▪ Important for care planning
(I43) Anxiety Disorder	I1dd	▪ See overall section change	▪ See overall section rationale
(I44) Depression (other than Bipolar)	I1ee	▪ See overall section change	▪ See overall section rationale
(I45) Manic Depression (Bipolar Disease)	I1ff	▪ See overall section change	▪ See overall section rationale
(I46) Schizophrenia	I1gg	▪ See overall section change	▪ See overall section rationale
(I47) Asthma/COPD or Chronic Lung Disease (includes chronic bronchitis and restrictive lung diseases such as asbestosis)	I1hh and I1ii	▪ See overall section change ▪ Items consolidated into expanded category	▪ See overall section rationale ▪ Providers vary in distinction and in assigning diagnosis of reactive airways diseases; restrictive lung disease also of functional significance
(I48) Cataracts, Glaucoma, or Macular Degeneration	I1jj, I1mm, I1ll	▪ See overall section change ▪ Items consolidated visual function in 2.0 section B	▪ See overall section rationale
(I49a-g) Additional Diagnoses	I3	▪ See overall section change	▪ See overall section rationale
	I1i	▪ Item deleted	▪ Not needed for program function. ▪ Section allows replacement with more prevalent condition without increase burden
	I1n	▪ Item deleted	▪ Function captured elsewhere in MDS
	I1nn	▪ Item deleted	▪ Non-specific item
	I1rr	▪ Item deleted	
	I2c	▪ Item deleted	▪ Not needed for program function. ▪ Allows replacement with chronic condition with ongoing care planning implications without increased form completion burden
	I2f	▪ Item deleted	▪ Category too broad to be clinically useful

Chapter 15: Summary of Item Changes and Rationale Table

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
	I2h	▪ Item deleted	▪ Not needed for program function. ▪ Section allows replacement with more prevalent condition without increase burden
	I2m	▪ Item deleted	

Chapter 15: Summary of Item Changes and Rationale Table

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
J. Health Conditions (Also see Chapter 11)			
(J1) Pain Management		▪ New item	▪ CMS, providers and pain content experts requested items to capture pain treatments ▪ Non-medication interventions written to accommodate advances in field of non-pharmacologic pain management and requires assessment of and documentation of response
(J1a) Scheduled pain medication regimen?		▪ See 3.0 item J1	▪ See 3.0 item J1
(J1b) Received PRN medication?		▪ See 3.0 item J1	▪ See 3.0 item J1
(J1c) Received non-medication intervention for pain?		▪ See 3.0 item J1	▪ See 3.0 item J1
(J2) Should Pain Assessment Interview be conducted?		▪ New item	▪ Skip prompt to guide assessor to attempt item with all communicative residents ▪ Resident self-report is preferred source for pain assessment

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
(J3) Pain Presence		▪ New interview for pain replaces staff assessment for residents who can be interviewed ▪ Look-back changed to 5 days	▪ 2.0 items have poor correspondence with independent pain assessments ▪ 2.0 items did not comport with accepted standard of pain self report ▪ In order to complete accurately, 2.0 items required time consuming systematic observations of all residents across all shift ▪ Providers and consumers have expressed frustration that 2.0 pain section addresses limited characteristics and is insufficient to capture pain experience ▪ 2.0 items relied on 3-point severity response, which is insufficient and did not match commonly used pain scales-- many users wanted a severity response between "moderate" & "horrible or excruciating" ▪ Self-report in responding to structured questions, as in MDS 3.0, is viewed as gold-standard for pain presence even for persons with cognitive impairment ▪ Tests showed ability to recall pain over 5 days ▪ With pain being reported as "5th vital sign," providers have increasingly used 0-10 scales in NHs & other settings ▪ Staff rated MDS 3.0 pain section as more clinically useful ▪ Reliability was high
(J4) Pain Frequency	J2a	▪ See 3.0 item J3	▪ Frequency responses drawn from standardized pain interviews used in other settings
		▪	▪

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
(J5) Pain Effect on Function		New item	▪ Items selected from geriatric pain measure ▪ Selected subset that best captured any reported pain effect on function ▪ Expands dimensions tapped by MDS pain assessment ▪ Reporting on the effect of pain aids in interpreting pain self report, particularly in moderate and severe groups
(J5a) …pain made it hard for you to sleep at night?		See 3.0 item J5	See 3.0 items J3 & J5
(J5b) …have you limited your day-to-day activities because of pain?		See 3.0 item J5	See 3.0 items J3 & J5
(J6) Pain Intensity (0-10 scale or verbal descriptor scale)		New interview for pain intensity replaces staff assessment for residents who can be interviewed	▪ See 3.0 item J3 ▪ Providers objected that 2.0 3-point pain scale was difficult to complete because did not have enough response levels ▪ IRT methods applied to create crosswalk between 3.0 J6a & J6b
(J6a) Pain Intensity (0-10 Scale)		See 3.0 item J6	0-10 is most consistently and commonly used pain severity scale in other settings, especially in hospital, and is also being used in nursing home populations
(J6b) Pain Intensity (Verbal Descriptor Scale)		See 3.0 item J6	▪ Verbal descriptor scale (VDS) is another commonly used scale. ▪ Pilot and national data indicate that slightly more persons with cognitive impairment can use VDS
(J7) Should the Staff Assessment for Pain be Completed?		▪ New Item ▪ Skip prompt to guide assessor that if resident interview is completed, the staff assessment is not completed	▪ Staff interview only required for residents who cannot complete pain interview ▪ Resident self-report is preferred over observation ▪ Observable behaviors retained to guide pain assessment in the minority of residents who cannot self-report. Skip pattern allows staff to focus systematic observation on resident who cannot self-report

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
(J8) Indicators of Pain		New item	▪ Checklist of observable pain behaviors drawn from pain observation scales. Intend to guide nursing home staff in identifying behaviors to assess in screening for pain ▪ Staff noted MDS 3.0 observable pain behaviors as clearer than 2.0 and likely to improve identification of pain in noncommunicative residents
(J8a) Staff indicate Non-verbal pain sounds		See 3.0 item J8	See 3.0 item J8
(J8b) Staff report vocal complaints of pain		See 3.0 item J8	See 3.0 item J8
(J8c) Staff report facial expressions of pain		See 3.0 item J8	See 3.0 item J8
(J8d) Staff report protective body movements or postures		See 3.0 item J8	See 3.0 item J8
(J8e) Staff report none of the above signs of pain		See 3.0 item J8	See 3.0 item J8
(J9) Shortness of Breath (dyspnea)		▪ Shortness of breath assessed separately from other problem conditions ▪ Wording change to items from other problem conditions list ▪ Shortness of breath when sitting and shortness of breath with exertion added ▪ Look-back changed to 5 days	▪ Brings 2 shortness of breath items from MDS 2.0 into a common section ▪ Adds distinction between shortness of breath with exertion and at rest that is important for assessment and care planning ▪ Symptom management is relevant to residents throughout their NH stay. A focused chart review found that respiratory symptoms were the most common symptoms recorded during the last days of life. In retrospective interviews after the death of a resident, family members and providers described pain (86%), lack of cleanliness (81%), dyspnea (75%), and incontinence (59%), in addition to a high prevalence of emotional symptoms. ▪ Shortness of breath has important implications for monitoring volume status, ability to participate in therapy, comfort, change in medical condition

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
(J9a) shortness of breath or trouble breathing with exertion (e.g. taking a bath)	J1l	See 3.0 item J9	See 3.0 item J9
(J9b) Shortness of breath or trouble breathing when sitting at rest		See 3.0 item J9	See 3.0 item J9
(J9c) Shortness of breath or trouble breathing when lying flat	J1b	See 3.0 item J9	▪ See 3.0 item J9 ▪ Reworded for clarity
(J9d) None of the above		See 3.0 item J9	See 3.0 item J9
(J10) Current tobacco use		New item replaces tobacco use in 1 year prior to admission	Improved relevance for safety, quality of life, facility care planning
(J11) Conditions may result in life expectancy less than 6 months	J5c	▪ Prognosis moved from check list to be assessed as separate item ▪ Wording change to item ▪ Added instructions regarding documentation to form	▪ Recommendation of standardized terminology consultant to change from checklist to Yes/No to increase reliability for key items ▪ Predicted prognosis such as in 2.0 item have very low sensitivity (29%) ▪ Wording change to ask if condition or chronic disease may limit life expectancy rather than consigning patient to a fixed time to live. Intends to decrease provider resistance to assigning this label to a resident

(J12a) Problem conditions: fever	J1h	Only change is to look-back period	▪ Retained for payment
			▪ If not needed for RUGs, would recommend delete:
			  o no other routinely collected vital signs are included in tool no evidence that temperature assessment or care planning is altered by item
			  o some older adults fail to mount temperature response to infection

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
(J12b) Problem conditions: vomiting	J1o	Only change is to look-back period	▪ Retained for payment. If not needed for RUGs, would recommend delete 　o No other routinely collected vital signs are included in tool no evidence that temperature assessment or care planning is altered by item
(J12c) Problem conditions: none of the above	J1p	No changes	-
(J13) Should the Fall History Admission or Fall History Follow-Up Assessment be Completed?		▪ New item ▪ Skip prompt to guide assessor	▪ Identify which assessment should be completed; fall items revised to distinguish between fall prior to admit and falls after admit
(J14) Fall History		▪ Change response from check list to Y/N ▪ Separate falls prior to admission from falls in facility ▪ Combine all fracture in 6 months prior	▪ Limited to falls prior to admission ▪ Response formed for key items changed from 'check all that apply' to 'Y/N' format per recommendation standardized terminology contractor (report to ASPE/CMS) ▪ 2.0 item failed to distinguish falls prior to admit from those in facility ▪ Hip fracture influencing function is obtained elsewhere in MDS 3.0
(J14a) Resident fell in 30 days before admission	J4a	See 3.0 item J14	See 3.0 item J14
(J14b) Resident fell in 31-180 days prior to admission	J4b	See 3.0 item J14	See 3.0 item J14
(J14c) Resident fractured bone in fall in last 6 mos	J4c, J4d	See 3.0 item J14	See 3.0 item J14
(J14d) Resident has fallen since admission		See 3.0 item J14	See 3.0 item J14
(J15) Any falls since last assessment		New item	▪ Identify skip for residents with no falls ▪ 2.0 item failed to focus on outcomes of fall in facility

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
(J16) Number of Falls Since Last Assessment		New item	▪ Fall and injury prevention experts and providers requested that fall reporting assessment considers extent of associated injury or fall outcome ▪ 2.0 item failed to focus on outcomes of fall in facility ▪ Staff rated 3.0 outcome categories as being clear ▪ 3.0 item reliability was high
(J16a) No-Injury		New item	See 3.0 item J16
(J16b) Injury (except major)		New item	See 3.0 item J16
(J16c) Major injury		New item	See 3.0 item J16
	J1a	Item deleted	
	J1c	Item deleted	▪ The MDS validation panel rated this item among the lowest in validity. ▪ Detection problems: There is significant evidence in the literature that dehydration is not identified by non-systematic staff observation. If we use the MDS to target facilities, we may paradoxically target the ones who are being careful enough to systematically detect the condition. ▪ Independent evaluations have shown that Intake is unreliably recorded in records ▪ MDS Methodology: This was an incident event on a prevalence form. Sometimes this condition is picked up after the resident is transferred to the ED or hospital, but these are not data sources for the item.
	J1d	Item deleted	▪ Independent evaluation has shown not reliable or accurate
	J1f	Item deleted	▪ Eliminated because not needed for program function and no evidence improved surveillance, assessment, or care planning by being on MDS
	J1g	Item deleted	See 2.0 item J1f

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
	J1j	Item deleted	▪ See 2.0 item J1f ▪ Should be rare to have resident with active internal bleeding managed in nursing home. No evidence presence on MDS improved assessment or care planning
	J1k	Item deleted	See 2.0 item J1f
	J1m	Item deleted	See 2.0 item J1f
	J3a	Item deleted	MDS TEP and validation panel recommended MDS 3.0 be limited to items improve initial screening. Identification of pain sites would be part of follow-up assessment along with factors such as what exacerbates and what relieves pain
	J3b	Item deleted	See 2.0 item J3a
	J3c	Item deleted	Assessors expressed confusion bout whether to include exertional angina, chest pain at rest or chest pain after meals
	J3d	Item deleted	See 2.0 item J3a
	J3e	Item deleted	See 2.0 item J3a
	J3f	Item deleted	See 2.0 item J3a
	J3g	Item deleted	See 2.0 item J3a
	J3h	Item deleted	See 2.0 item J3a
	J3i	Item deleted	See 2.0 item J3a
	J3j	Item deleted	See 2.0 item J3a
	J5a	Item deleted	Eliminated because not needed for program function and no evidence improved assessment or care planning on MDS
	J5b	Item deleted	Eliminated because not needed for program function and no evidence improved assessment or care planning on MDS
	J5d	Item deleted	Not needed
	J4e	Item deleted	Correspond to fall items' revised format

Chapter 15: Summary of Item Changes and Rationale Table

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
K. Swallowing/Nutritional Status (Also see Chapter 11)			
(K1) Swallowing disorder	K1	▪ New/revised items to screen for observable signs and symptoms of swallowing disorder replaces 4-item oral problem check list ▪ Moved related item from dental section (residual food in mouth) ▪ Look-back changed to 5 days	▪ Focus on observable signs and symptoms gives staff a tool to improve detection and reliability ▪ Staff rated 3.0 items as being clinically useful ▪ 3.0 item reliability was high
(K1a) Loss of liquids/solids from mouth when eating or drinking		See 3.0 item K1	See 3.0 item K1
(K1b) Holding food in mouth/cheeks or residual food in mouth after meals	L1a	See 3.0 item K1	See 3.0 item K1
(K1c) Coughing or choking during meals or when swallowing medications		See 3.0 item K1	See 3.0 item K1
(K1d) Complaints of difficulty or pain with swallowing	K1b	See 3.0 item K1	See 3.0 item K1
(K1e) None of the above	K1d	See 3.0 item K1	See 3.0 item K1
(K2a) Height	K2a	▪ Change to item label ▪ Instructions for rounding added to form	Correspond to fall items' revised format
(K2b) Weight	KJ2b	▪ Change to item label ▪ Instructions for rounding added to form	Rounding rule has been source of error therefore added rule to label to aid assessor
(K3) Weight loss of 5% or more in last 30 days or 10% or more in last 180 days	K3a	Item response change identifies weight loss resulting from a physician-prescribed weight loss regimen	With increase in number of admits with obesity, providers have requested a code to capture intentional weight loss as part of a planned outcome

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
(K4) Nutritional Approaches	K5	▪ Minor wording change ▪ Form adds information from 2.0 instructions to item labels ▪ Removed categories not needed for program monitoring ▪ Look-back changed to 5 days	▪ List compressed to those items needed for program monitoring to decrease provider reporting burden. ▪ No evidence additional items improved assessment or targeting of services ▪ Labels modified to include parts of definitions in order to clarify common sources of confusion or error in coding these items
(K4a) Parenteral /IV feeding	K5a	See 3.0 item K4	See 3.0 item K4
(K4b) Feeding tube - nasogastric or abdominal (PEG)	K5b	See 3.0 item K4	See 3.0 item K4
(K4c) Mechanically altered diet	K5c	See 3.0 item K4	See 3.0 item K4
(K4d) Therapeutic diet	K5e	See 3.0 item K4	See 3.0 item K4
(K4e) None of the above	K5i	See 3.0 item K4	See 3.0 item K4
(K5) Percent intake by artificial route	K6	▪ Response categories simplified to those needed for program function ▪ Look-back changed to 5 days	Reduce form completion burden; see subitems for detail
(K5a) Proportion of total calories by parenteral or tube feeding	K6a	Response categories simplified to those needed for program function	5 category response in MDS 2.0 not needed for program function. To simplify coding task and decrease respondent burden, the number of response categories were reduced to the 3 needed
(K5b) Average fluid intake per day by IV or tube	K6b	Response categories simplified to those needed for program monitoring	6 category response in MDS 2.0 not needed for program function. To simplify coding task, and decrease respondent burden, the number of response categories were reduced to 2
	K1a	Item deleted	Replaced with observable signs and symptoms of swallowing disorder checklist and MDS 3.0 item L1f
	K3b	Item deleted	

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
	K4a	Item deleted	▪ Not required for program function. Decreased or increased appetite screened for in PHQ-9. Clinical dietary evaluation can consider these items outside MDS assessment ▪ 1% of our MDS 2.0 sample were reported as having this condition
	K4b	Item deleted	▪ See MDS 2.0 item K4a ▪ 0.4% of our MDS 2.0 sample were reported as having this condition
	K4c	Item deleted	▪ Eliminated because independent investigation has shown to be inaccurate
	K4d	Item deleted	Not needed
	K5d	Item deleted	▪ MDS 3.0 TEP recommended MDS be limited to items that improve initial screening for common and often missed geriatric syndromes or were needed for program function ▪ 0.4% of our MDS 2.0 sample were reported as having this condition
	K5f	Item deleted	▪ MDS 3.0 TEP recommended MDS be limited to items that improve initial screening for common and often missed geriatric syndromes or were needed for program function ▪ No evidence that this item improved appropriate use of supplements
	K5g	Item deleted	▪ MDS 3.0 TEP recommended MDS be limited to items that improve initial screening for common and often missed geriatric syndromes or were needed for program function ▪ No evidence that having items on MDS improved assessment or targeting of services
	K5h	Item deleted	Other related MDS 3.0 items capture this information: K3 (response code = 2); M11d

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
L. Oral/Dental Status (Also see Chapter 11)			
(L1) Dental	L1	▪ MDS 3.0 item requires physical exam ▪ New or revised items developed with the American Dental Association and Special Care Dentistry Association ▪ Look-back changed to 5 days	▪ Entire section revised to include items acceptable to the American Dental Association and Special Care Dentistry Association ▪ 2.0 items did not reflect pathology groupings ▪ 2.0 items had limited ability to identify prevalent and important oral conditions ▪ New items emphasize examination of oral cavity. ▪ MDS 3.0 changes make item groupings more consistent with etiological groupings and attempt to improve staff identification of problem condition
(L1a) Broken or loosely fitting full or partial denture	L1b	See 3.0 item L1	See 3.0 item L1
(L1b) No natural teeth or tooth fragments	L1c	See 3.0 item L1	See 3.0 item L1
(L1c) Abnormal mouth tissue (Ulcers, masses, oral lesions, including under denture or partial if one is worn)	L1e	See 3.0 item L1	See 3.0 item L1
(L1d) Obvious or likely cavity or broken natural teeth	L1d	▪ See 3.0 item L1 ▪ Loose teeth moved to another item	See 3.0 item L1
(L1e) Inflamed or bleeding gums or loose natural teeth	L1e, L1d	See 3.0 item L1	See 3.0 item L1
(L1f) Mouth or facial pain	K1c	See 3.0 item L1	See 3.0 item L1
(L1g) None of the above	L1g	See 3.0 item L1	See 3.0 item L1
(L1h) Unable to examine		See 3.0 item L1	See 3.0 item L1

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
M. Skin Conditions (Also see Chapter 11)			
(M1) Did the resident have a pressure ulcer in the last 5 days?		New item	Identify skip for residents with no PU
(M2) Number of existing stage 1 pressure ulcers	M1a	▪ Overall section intent: change to staging based on deepest anatomical stage instead of MDS 2.0 reverse stage ▪ MDS 3.0 items allow identification of pressure ulcer present on admission ▪ MDS 3.0 items capture dimensions (length and width) ▪ Definitions for each stage placed on MDS 3.0 form ▪ Unstageable ulcers assessed as separate items ▪ Subitems for Stage 2, 3, and 4 ulcers now collect 'ulcers present on admission' and 'dimensions of largest ulcer' ▪ Stasis ulcers no longer staged ▪ Look-back changed to 5 days	▪ 2.0 item used reverse staging which does not reflect the pathophysiology of PU healing ▪ 2.0 item fails to capture size, change in size, or improvements ▪ 2.0 item inappropriately staged "stasis" ulcers ▪ 2.0 item failed to document ulcers present on admission ▪ 2.0 item lacked category for unstageable ulcers ▪ Changes recommended by WOCN, NPUAP ▪ MDS 3.0 items use deepest anatomical stage, an approach that more accurately reflects tissue changes seen in resolution of pressure ulcer ▪ Items in section revised to reflect current standard of care and recommended facility practice for assessing skin conditions ▪ Alignment with current care avoids current facility practice of "double" charting, or keeping regular records that reflect best-practice staging and separate reverse-staging records just for MDS ▪ MDS 3.0 items capture dimensions (length & width) to better capture incremental change between deepest stage and healed ▪ Definitions for staging based on NPUAP published definitions ▪ Includes category for unstageable ulcers according to best-practices ▪ Eliminates inappropriate "staging" of stasis ulcers ▪ Definitions of stages form to improve ease of coding and reliability

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
(M3) Stage 2 Ulcers		See 3.0 item M2	See 3.0 item M2
(M3a) Number of existing stage 2 pressure ulcers	M1b	See 3.0 item M2	See 3.0 item M2
(M3b) Number of stage 2 ulcers present on admission		See 3.0 item M2	See 3.0 item M2
(M3c) Current length of largest stage 2 pressure ulcer		See 3.0 item M2	See 3.0 item M2
(M3d) Current width of largest stage 2 pressure ulcer		See 3.0 item M2	See 3.0 item M2
(M4) Stage 3 Ulcers		See 3.0 item M2	See 3.0 item M2
(M4a) Number of stage 3 ulcers	M1c	See 3.0 item M2	See 3.0 item M2
(M4b) Number of stage 3 ulcers that were present at admission		See 3.0 item M2	See 3.0 item M2
(M4c) Current length of largest stage 3 pressure ulcer		See 3.0 item M2	See 3.0 item M2
(M4d) Current width of largest stage 3 pressure ulcer		See 3.0 item M2	See 3.0 item M2
(M5) Stage 4 Ulcers		See 3.0 item M2	See 3.0 item M2
(M5a) Number of existing stage 4 pressure ulcers	M1d	See 3.0 item M2	See 3.0 item M2
(M5b) Number of these stage 4 ulcers that were present on admission		See 3.0 item M2	See 3.0 item M2
(M5c) Current length of largest stage 4 pressure ulcer		See 3.0 item M2	See 3.0 item M2
(M5d) Current width of largest stage 4 pressure ulcer		See 3.0 item M2	See 3.0 item M2
(M6) Unstageable Ulcers		See 3.0 item M2	See 3.0 item M2
(M6a) Number of unstageable ulcers		See 3.0 item M2	See 3.0 item M2
(M6b) Number of unstageable ulcers that were present at admission		See 3.0 item M2	See 3.0 item M2
(M7) Tissue type for most advanced stage		See 3.0 item M2	See 3.0 item M2

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
(M8) Worsening in Pressure Ulcer Status Since Last Assessment		See 3.0 item M2	▪ See 3.0 item M2 ▪ Allow identification of deterioration in PU status
(M8a) No prior assessment		See 3.0 item M2	See 3.0 item M2 & M8
(M8b) Stage 2 Ulcers (Number of stage 2 ulcers not present or at lesser stage on last MDS)		See 3.0 item M2	See 3.0 item M2 & M8
(M8c) Stage 3 Ulcers (Number of stage 3 ulcers not present or at lesser stage on last MDS)		See 3.0 item M2	See 3.0 item M2 & M8
(M8d) Stage 4 Ulcers (Number of stage 4 ulcers not present or at lesser stage on last MDS)		See 3.0 item M2	See 3.0 item M2 & M8
(M9) Healed Pressure Ulcers		See 3.0 item M2	▪ See 3.0 item M2 & M9 ▪ Different stage ulcers are expected to vary in healing time. This approach captures the number healed at each stage.
(M9a) No prior assessment or no pressure ulcers on prior assessment		See 3.0 item M2	See 3.0 item M2 & M9
(M9b) Number of stage 2 ulcers closed since last assessment	M3	See 3.0 item M2	See 3.0 item M2 & M9
(M9c) Number of stage 3 ulcers closed since last assessment	M3	See 3.0 item M2	See 3.0 item M2 & M9
(M9d) Number of stage 4 ulcers closed since last assessment	M3	See 3.0 item M2	See 3.0 item M2 & M9
(M10) Other Ulcers, Wounds, and Skin Problems	M4	▪ Separate items for venous, arterial and diabetic foot ulcers (per NPUAP, WOCN) ▪ Minor changes to subitem wording ▪ Look-back changed to 5 days	-

Chapter 15: Summary of Item Changes and Rationale Table

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
(M10a) Venous or arterial ulcers		New item	Venous or arterial ulcers separated from pressure ulcers per content expert recommendation
(M10b) Diabetic foot ulcer	M6c	New item	▪ 2.0 did not report diabetic foot ulcer ▪ NPUAP recommendation
(M10c) Other foot or lower extremity infection (cellulitis)	M6b	Minor change to item wording	Clarity
(M10d) Surgical wounds	M4g	No changes	-
(M10e) Open lesions other than ulcers, rashes, cuts (e.g., cancer lesions)	M4c	No changes	-
(M10f) Burns	M4b	Minor change to item wording	Clarity
(M10g) None of the above	M4h		-
(M11) Skin Treatments	M5	Only change is to look-back period	Items retained in current form for payment purposes
(M11a) Pressure reducing device for chair	M5a	See MDS 3.0 item M11	See MDS 3.0 item M11
(M11b) Pressure reducing device for bed	M5b	See MDS 3.0 item M11	See MDS 3.0 item M11
(M11c) Turning/repositioning program	M5c	See MDS 3.0 item M11	See MDS 3.0 item M11
(M11d) Nutrition or hydration intervention to manage skin problems	M5d	See MDS 3.0 item M11	See MDS 3.0 item M11
(M11e) Ulcer care	M5e	See MDS 3.0 item M11	See MDS 3.0 item M11
(M11f) Surgical wound care	M5f	See MDS 3.0 item M11	See MDS 3.0 item M11
(M11g) Applications of dressings	M5g	See MDS 3.0 item M11	See MDS 3.0 item M11
(M11h) Applications of ointments/medications	M5h	See MDS 3.0 item M11	See MDS 3.0 item M11
(M11i) Application of dressings to feet	M6f	See MDS 3.0 item M11	See MDS 3.0 item M11
(M11i) None of the above	M5j	No changes	-
	M2a	Item deleted	Replaced with new pressure ulcer assessment
	M2b	Item deleted	Staging stasis ulcers inappropriate per content experts

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
	M4a	Item deleted	▪ Item not needed for program function ▪ No evidence improved staff detection since charting already occurs
	M4d	Item deleted	▪ Item not needed for program function ▪ No evidence improved staff detection since charting already occurs
	M4e	Item deleted	▪ Item not needed for program function ▪ Sensitivity and specificity low; inter-rater agreement among physicians and among nurses low
	M4f	Item deleted	▪ Item not needed for program function ▪ No evidence improved staff detection since charting already occurs
	M5i	Item deleted	▪ Item not needed for program function ▪ No evidence improved assessment or care planning
	M6a	Item deleted	▪ Item not needed for program function ▪ No evidence improved assessment or care planning
	M6d	Item deleted	▪ Item not needed for program function ▪ No evidence improved assessment or care planning
	M6e	Item deleted	▪ Item not needed for program function ▪ No evidence improved assessment or care planning

Chapter 15: Summary of Item Changes and Rationale Table

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
N. Medications			
(N1) Number of days injectable medications were received during last 5 days	O3	▪ Change from "injection of any type" to "injectable medications" ▪ Look-back changed to 5 days	▪ Increase item specificity to improve coding and clarity ▪ MDS 2.0 item has been a source of confusion
(N2) Medications Received	O4	▪ Change from # of days to any time ▪ Look-back changed to 5 days	Number of days not needed for program function
(N2a) Antipsychotic	O4a	See MDS 3.0 Item N2	-
(N2b) Antianxiety	O4b	See MDS 3.0 Item N2	-
(N2c) Antidepressant	O4c	See MDS 3.0 Item N2	-
(N2d) Hypnotic	O4d	See MDS 3.0 Item N2	-
(N2e) Anticoagulant		Subitem for anticoagulant added	Anticoagulants are a common medication class in the nursing home population, which requires close monitoring and follow-up
(N2f) None of the above		'None of the above' response option added	Match response format across the MDS 3.0 form
	O4e	Item deleted	-
	O1	Item deleted	Count of medication rated invalid as a quality indicator. Sometimes appropriate management of multiple conditions requires more medications. No evidence that item improved surveillance for iatrogenesis or drug interactions
	O2	Item deleted	-

Chapter 15: Summary of Item Changes and Rationale Table

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
			We tested change to 5-day look-back with separate data element for 5 prior hospital days if 5-day assessment. We were unable to accomplish crosswalk to payment cells without significant change in payment. Since re-calibration is outside our project, we have returned to original look-back pending CMM examination of the data
(O1a) Chemotherapy	P1aa	No changes	-
(O1bl) Radiation	P1ah	No changes	-
(O1cl) Oxygen therapy	P1ag	No changes	-
(O1dl) Suctioning	P1ai	No changes	-
(O1el) Tracheostomy care	P1aj	No changes	-
(O1fl) Ventilator or respirator	P1al	No changes	-
(O1gl) IV medications	P1ac	No changes	-
(O1hl) Transfusions	P1ak	No changes	-
(O1il) Dialysis	P1ab	No changes	-
(O1jl) Hospice care	P1ao	No changes	-
(O1kl) Respite care	P1aq	No changes	-
(O1ll) Isolation or quarantine		New item	With increases in drug resistant infections, this is a potential resource and care planning issue
(O1ml) None of the above	P1as	No changes	-
(O2) Influenza Vaccine	W2	▪ 'Not applicable' response option added to response list along with label that includes the dates for N/A ▪ 'None of the above' response option added to follow-up item	▪ Clarity ▪ The variation in relevant dates has been a source of coding error. ▪ Relevant assessment window requested by CMS to capture vaccines given in April and March
(O2b) If influenza Vaccine not received, state reason	W2b	See 3.0 item O2	See 3.0 item O2

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
(O2a) Did the resident receive the influenza vaccine in this facility for this year's influenza season (October 1 through March 31)?	W2a	See MDS 3.0 item O2	See MDS 3.0 item O2
(O2b=1) Not in facility during this year's flu season	W2a=1	See 3.0 item O2	See 3.0 item O2
(O2b=2) Received outside of this facility	W2b=2	See 3.0 item O2	See 3.0 item O2
(O2b=3) Not eligible – medical contraindication	W2b=3	See 3.0 item O2	See 3.0 item O2
(O2b=4) Offered and declined	W2b=4	See 3.0 item O2	See 3.0 item O2
(O2b=5) Not offered	W2b=5	See 3.0 item O2	See 3.0 item O2
(O2b=6) Vaccine on order but not received by facility	W2b=6	▪ Label changed ▪ See 3.0 item O2	Label reflects proposed language from NQF Influenza and Pneumococcal Immunization Steering Committee harmonization activity (final language pending)
(O2b=7) None of the above		See 3.0 item O2	See 3.0 item O2
(O3) Pneumococcal Vaccine	W3	Response label in 03b has changed	See subitems
(O3a) Is the resident's Pneumococcal Vaccination up to date?	W3a	Replaced abbreviation with full wording	Clarity
(O3b) If Pneumococcal vaccine not received, state reason:	W3b	Replaced abbreviation with full wording	Clarity
(O3b=1) Not eligible – medical contraindication	W3b=1	"Medical contraindication" added to label	Specify "not eligible" in order to improve clarity and reduce coding error
(O3b=2) Offered and declined	W3b=2	No changes	-
(O3b=3) Not offered	W2b=3	No changes	-
(O4) Therapies	P1b	One category added	See subitems
(O4aI) Days of speech therapy	P1ba(A)	No changes	-
(O4aII) Minutes of speech therapy	P1ba(B)	No changes	-
(O4bI) Days of occupational therapy	P1bb(A)	No changes	-
(O4bII) Minutes of occupational therapy	P1bb(B)	No changes	-

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
(O4cI) Days of physical therapy	P1bc(A)	No changes	-
(O4cII) Minutes of physical therapy	P1bc(B)	No changes	-
(O4dI) Days of respiratory therapy	P1bd(A)	No changes	-
(O4eI) Days of psychological therapy	p1be(A)	No changes	-
(O4fI) Days of recreational therapy	T1a(A)	▪ Recreational Therapy days added ▪ Music Therapy added to label	Request of recreational and music therapy groups
(O5) Nursing Rehabilitation/Restorative Care	P3	No changes	-
(O5a) Days of passive range of motion	P3a	No changes	-
(O5b) Days of active range of motion	P3b	No changes	-
(O5c) Days of splint or brace assistance	P3c	No changes	-
(O5d) Days of training and skill practice in bed mobility	P3d	No changes	-
(O5e) Days of training and skill practice in transfer	P3e	No changes	-
(O5f) Days of training and skill practice in walking	P3f	No changes	-
(O5g) Days of training and skill practice in dressing or grooming	P3g	No changes	-
(O5h) Days of training or skill practice in eating or swallowing	P3h	No changes	-
(O5i) Days of training and skill practice in amputation/prosthesis care	P3i	No changes	-
(O5j) Days of training or skill practice in communication	P3j	No changes	-
(O6) Days physician examined resident	P7	Minor change to item wording	Distinction between visit and exam in MDS 2.0 has been a source of coding error.
(O7) Days physician changed resident's orders	P8	No changes	-

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
	P1ad	Item deleted	Not used for program function. MDS TEP and validation panel recommended that MDS 3.0 be limited to items that improve initial screening for common and missed geriatric syndromes. No evidence item being on MDS form improved surveillance or appropriate use
	P1ae	Item deleted	Not used for program function. MDS TEP and validation panel recommended that MDS 3.0 be limited to items that improve initial screening for common and missed geriatric syndromes. No evidence item being on MDS form improved surveillance or appropriate use
	P1af	Item deleted	Ostomy captured in section H
	P1am	Item deleted	See 2.0 item P1ad
	P1an	Item deleted	See 2.0 item P1ad
	P1ap	Item deleted	See 2.0 item P1ad
	P1ar	Item deleted	See 2.0 item P1ad
	P1bd(B)	Item deleted	See 2.0 item P1ad
	P1be(B)	Item deleted	See 2.0 item P1ad
	P2a	Item deleted	See 2.0 item P1ad
	P2b	Item deleted	See 2.0 item P1ad
	P2c	Item deleted	See 2.0 item P1ad
	P2d	Item deleted	See 2.0 item P1ad
	P2e	Item deleted	See 2.0 item P1ad
	P2f	Item deleted	Not needed
	P3k	Item deleted	Not needed
	P5	Item deleted	See 2.0 item P1ad
	P6	Item deleted	See MDS 2.0 item P5

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
	P9	Item deleted	▪ Nonspecific ▪ Not used for program function. MDS TEP and validation panel recommended that MDS 3.0 be limited to items that improve initial screening for common and missed geriatric syndromes. No evidence item being on MDS form improved surveillance or appropriate use

Chapter 15: Summary of Item Changes and Rationale Table

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
P. Restraints			
(P1) Restraints	P4	▪ Definition of restraints added to form ▪ Use of restraints separated for restraints used in bed and out of bed ▪ 'Other restraint' response code added ▪ Bed rails combined into one item ▪ Look-back changed to 5 days	▪ Improve clarity and accuracy of coding ▪ Distinguishing type of bed rails was a source of error and not necessary for tracking restraints
(P1a) Bed rail (any type; e.g., full, half, one side)	P4a, P4b	See 3.0 item P1	See 3.0 item P1
(P1b) Trunk restraint in bed	P4c	See 3.0 item P1	See 3.0 item P1
(P1c) Limb restraint in bed	P4d	See 3.0 item P1	See 3.0 item P1
(P1d) Other restraints in bed		See 3.0 item P1	See 3.0 item P1
(P1e) Trunk restraint used in chair or out of bed	P4c	See 3.0 item P1	See 3.0 item P1
(P1f) Limb restraint used in chair or out of bed	P4d	See 3.0 item P1	See 3.0 item P1
(P1g) Chair prevents rising	P4e	See 3.0 item P1	See 3.0 item P1
(P1h) Other restraint used in chair or out of bed		See 3.0 item P1	See 3.0 item P1

Chapter 15: Summary of Item Changes and Rationale Table

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
Q. Participation in Assessment and Goal Setting			
(Q1) Participation in Assessment	R1	Combined response categories b and c	Clarity
(Q1a) Resident	R1a	See 3.0 item Q1	See 3.0 item Q1
(Q1b) Family or significant other	R1b, R1c	See 3.0 item Q1	▪ See 3.0 item Q1 ▪ Significant other moved here to decrease confusion about when to code as a family vs. significant other
(Q2) Do you want to talk to someone about the possibility of returning to the community?	Q1a	New item	CMS programming recommendation to aid in identifying persons who should be referred for additional assistance
(Q3) Resident's Overall Goals		New item replaces projected stay item	▪ 3.0 item reliability was excellent ▪ Refocuses on resident or family/significant others' expectations for stay Staff who used the MDS 3.0 goals of care item rated it as helpful in clarifying expectations and as opening up helpful discussions about care planning ▪ TEP, Validation and other workgroups all expressed belief that having an item addressing goals of stay would be an important assessment to include in MDS. Staff feedback positive with use in national trial and reliability excellent
(Q3a) Resident goals of care established during assessment process		See 3.0 item Q3	▪ See 3.0 item Q3 ▪ Also see Chapter 11
(Q3b) Information source for resident goals of care		See 3.0 item Q3	See 3.0 item Q3
	Q1b	Item deleted	Consider for discharge planning RAP
	Q1c	Item deleted	Not used for program function
	Q2	Item deleted	-

Chapter 15: Summary of Item Changes and Rationale Table

MDS 3.0 Recommended Item	2.0 Item #	Changes from MDS 2.0	Reason for Change
		T. Therapy Supplement for PPS	
	T1a(B)	Item deleted	Minutes not used for program function
	T1b	No changes	Returned to form because payment item; not tested in MDS 3.0 field trial (analyzed in STRIVE project)
	T1c	No changes	See T1b
	T1d	No changes	See T1b
	T2a	Item deleted	Not used in current program function
	T2b	Item deleted	See 2.0 item T2a
	T2c	Item deleted	See 2.0 item T2a
	T2d	Item deleted	See 2.0 item T2a
	T2e	Item deleted	See 2.0 item T2a

References

1. Office of the Inspector General. Nursing Home Resident Assessment Quality of Care. In: OEI-02-99-00040, editor; January 2001.
2. Katz S, Adams C, Beigel A. Improving the Quality of Care in Nursing Homes. Washington, DC: National Academy Press; 1986.
3. Hawes C, Mor V, Phillips CD, et al. The OBRA-87 Nursing Home Regulations and Implementation of the Resident Assessment Instrument: Effects on Process Quality. Journal of the American Geriatrics Society 1997;45(8):977-985.
4. Phillips CD, Morris JN, Hawes C, et al. Association of the Resident Assessment Instrument (RAI) with Changes in Function, Cognition, and Psychosocial Status. Journal of the American Geriatrics Society 1997;45(8):986-993.
5. Abt Associates Inc., HRCA Research and Training Institute, and Brown University. Validation of Long-term and Post-acute Care Quality Indicators, Final Draft Report Prepared for CMS, Office of Clinical Standards and Quality, Aug 02. 2002.
6. Fries BE, Schneider DP, Foley WJ, et al. Refining a Case-mix Measure for Nursing Homes: Resource Utilization Groups (RUG-III). Medical Care 1994;32(7):668-685.
7. Hirdes JP, Frijters DH, Teare GF. The MDS-CHESS scale: A New Measure to Predict Mortality in Institutionalized Older People. Journal of the American Geriatrics Society 2003;51(1):96-100.
8. Snowden M, McCormick W, Russo J, et al. Validity and Responsiveness of the Minimum Data Set. Journal of the American Geriatrics Society 1999;47(8):1000-1004.
9. Morris JN, Fries BE, Mehr DR, et al. MDS Cognitive Performance Scale. Journal of Gerontology 1994;49(4):M174-182.
10. Ouslander JG. The Resident Assessment Instrument (RAI): Promise and Pitfalls. Journal of the American Geriatrics Society 1997;45(8):975-976.
11. Teresi J, Abrams R, Holmes D, et al. Prevalence of Depression and Depression Recognition in Nursing Homes. Social Psychiatry and Psychiatric Epidemiology 2001;36(12):613-620.
12. Morris JN, Hawes C, Fries BE, et al. Designing the National Resident Assessment Instrument for Nursing Homes. The Gerontologist 1990;30(3):293-307.
13. Morris JN, Nonemaker S, Murphy K, et al. A Commitment to Change: Revision of HCFA's RAI. Journal of the American Geriatrics Society 1997;45(8):1011-1016.
14. Hawes C, Morris JN, Phillips CD, et al. Reliability Estimates for the Minimum Data Set for Nursing Home Resident Assessment and Care Screening (MDS). The Gerontologist 1995;35(2):172-178.
15. Office of the Inspector General. Nursing Home Resident Assessment Resource Utilization Groups. OEI-02-99-0041 January 2001.
16. Casten R, Lawton MP, Parmelee PA, et al. Psychometric Characteristics of the Minimum Data Set I: Confirmatory Factor Analysis. Journal of the American Geriatrics Society 1998;46(6):726-735.
17. Horgas AL, Dunn K. Pain in Nursing Home Residents. Comparison of Residents' Self-report and Nursing Assistants' Perceptions. Incongruencies Exist in Resident and Caregiver Reports of Pain; Therefore, Pain Management Education is Needed to Prevent Suffering. Journal of Gerontological Nursing 2001;27(3):44-53.
18. Fisher SE, Burgio LD, Thorn BE, et al. Pain Assessment and Management in Cognitively Impaired Nursing Home Residents: Association of Certified Nursing Assistant Pain

Report, Minimum Data Set Pain Report, and Analgesic Medication Use. Journal of the American Geriatrics Society 2002;50(1):152-156.

19. Anderson RL, Buckwalter KC, Buchanan RJ, et al. Validity and Reliability of the Minimum Data Set Depression Rating Scale (MDSDRS) for Older Adults in Nursing Homes. Age and Ageing 2003;32(4):435-438.

20. Kane RA, Kling KC, Bershadsky B, et al. Quality of Life Measures for Nursing Home Residents. The Journals of Gerontology Series A, Biological Sciences and Medical Sciences 2003;58(3):240-248.

21. Kane R. Mandated Assessments. In: Kane R, Kane R, editors. Assessing Older Persons. NY: Oxford University Press; 2000.

22. Mehr DR, Fries BE, Williams BC. How Different Are VA Nursing Home Residents? Journal of the American Geriatrics Society 1993;41(10):1095-1101.

23. Krauss NA, Altman BM. Characteristics of Nursing Home Residents-1996. Rockville, MD: Agency for Health Care Policy and Research; 1998.

24. Shaughnessy P, Kramer A. The Increased Needs of Patients in Nursing Homes and Patients Receiving Home Health Care. New England J Med 1990;322(1):21-27.

25. Kane RL, Bell RM, Riegler SZ. Value Preferences for Nursing Home Outcomes. The Gerontologist 1986;26(3):303-308.

26. O'Brien LA, Grisso JA, Maislin G, et al. Nursing Home Residents' Preferences for Life-sustaining Treatments. JAMA : The Journal of the American Medical Association 1995;274(22):1775-1779.

27. Simmons SF, Schnelle JF. Strategies to Measure Nursing Home Residents' Satisfaction and Preferences Related to Incontinence and Mobility Care: Implications for Evaluating Intervention Effects. The Gerontologist 1999;39(3):345-355.

28. Simmons SF, Schnelle JF, Uman GC, et al. Selecting Nursing Home Residents for Satisfaction Surveys. The Gerontologist 1997;37(4):543-550.

29. Brook RH, Lohr KN. Efficacy, Effectiveness, Variations, and Quality. Boundary-crossing Research. Med Care 1985;23(5):710-722.

30. Brook RH, Chassin MR, Fink A, et al. A Method for the Detailed Assessment of the Appropriateness of Medical Technologies. International Journal of Technology Assessment in Health Care 1986;2(1):53-63.

31. Brook RH, McGlynn EA, Cleary PD. Quality of Health Care. Part 2: Measuring Quality of Care. The New England Journal of Medicine 1996;335(13):966-970.

32. Kravitz RL, Laouri M, Kahan JP, et al. Validity of Criteria Used for Detecting Underuse of Coronary Revascularization. JAMA : The Journal of the American Medical Association 1995;274(8):632-638.

33. Shekelle PG, Chassin MR, Park RE. Assessing the Predictive Validity of the RAND/UCLA Appropriateness Method Criteria for Performing Carotid Endarterectomy. International Journal of Technology Assessment in Health Care 1998;14(4):707-727.

34. Shekelle PG, Kahan JP, Bernstein SJ, et al. The Reproducibility of a Method to Identify the Overuse and Underuse of Medical Procedures. The New England Journal of Medicine 1998;338(26):1888-1895.

35. Selby JV, Fireman BH, Lundstrom RJ, et al. Variation Among Hospitals in Coronary-Angiography Practices and Outcomes after Myocardial Infarction in a Large Health Maintenance Organization. The New England Journal of Medicine 1996;335(25):1888-1896.

36. Higashi T, Shekelle PG, Adams JL, et al. Quality of Care is Associated with Survival in Vulnerable Older Patients. Annals of Internal Medicine 2005;143(4):274-281.

37. Hartmaier SL, Sloane PD, Guess HA, et al. Validation of the Minimum Data Set Cognitive Performance Scale: agreement with the Mini-Mental State Examination. J Gerontol A Biol Sci Med Sci 1995;50(2):M128-133.

38. Gruber-Baldini AL, Zimmerman SI, Mortimore E, et al. The Validity of the Minimum Data Set in Measuring the Cognitive Impairment of Persons Admitted to Nursing Homes. J Am Geriatr Soc 2000;48(12):1601-1606.

39. Singer C, Luxenberg J. Diagnosing Dementia in Long-term Care Facilities. J Am Med Dir Assoc 2003;4(6 Suppl):S134-140.

40. Chodosh J, Petitti DB, Elliott M, et al. Physician Recognition of Cognitive Impairment: Evaluating the Need for Improvement. J Am Geriatr Soc 2004;52(7):1051-1059.

41. Macdonald AJ, Carpenter GI. The Recognition of Dementia in "non-EMI" Nursing Home Residents in South East England. Int J Geriatr Psychiatry 2003;18(2):105-108.

42. Pinholt EM, Kroenke K, Hanley JF, et al. Functional Assessment of the Elderly. A Comparison of Standard Instruments with Clinical Judgment. Archives of Internal Medicine 1987;147(3):484-488.

43. Sorenson L, Foldspang A, Gulmann N, et al. Assessment of Dementia in Nursing Home Residents by Nurses and Assistants; Criteria Validity and Determinants. Int J Geriatr Psychiatry 2001;16(6):615-621.

44. Borson S, Scanlan JM, Watanabe J, et al. Improving Identification of Cognitive Impairment in Primary Care. International Journal of Geriatric Psychiatry 2006;21(4):349-355.

45. Registered Nurses Association of Ontario. Screening for Delirium, Dementia and Depression in Older Adults. Toronto, Canada: Registered Nurses Association of Ontario; 2003.

46. Petersen RC, Stevens JC, Ganguli M, et al. Practice Parameter: Early Detection of Dementia: Mild Cognitive Impairment (an Evidence-based Review). Report of the Quality Standards Subcommittee of the American Academy of Neurology. Neurology 2001;56(9):1133-1142.

47. Inouye SK, Foreman MD, Mion LC, et al. Nurses' Recognition of Delirium and its Symptoms: Comparison of Nurse and Researcher Ratings. Archives of Internal Medicine 2001;161(20):2467-2473.

48. McNicoll L, Pisani MA, Ely EW, et al. Detection of Delirium in the Intensive Care Unit: Comparison of Confusion Assessment Method for the Intensive Care Unit with Confusion Assessment Method Ratings. Journal of the American Geriatrics Society 2005;53(3):495-500.

49. Callahan CM, Unverzagt FW, Hui SL, et al. Six-item Screener to Identify Cognitive Impairment Among Potential Subjects for Clinical Research. Med Care 2002;40(9):771-781.

50. Folstein MF, Folstein SE, McHugh PR. "Mini-Mental State". A Practical Method for Grading the Cognitive State of Patients for the Clinician. Journal of Psychiatric Research 1975;12(3):189-198.

51. Bland RC, Newman SC. Mild Dementia or Cognitive Impairment: the Modified Mini-Mental State Examination (3MS) as a Screen for Dementia. Can J Psychiatry 2001;46(6):506-510.

52. Grace J, Nadler JD, White DA, et al. Folstein vs Modified Mini-Mental State Examination in Geriatric Stroke. Stability, Validity, and Screening Utility. Archives of Neurology 1995;52(5):477-484.

53. McDowell I, Kristjansson B, Hill GB, et al. Community Screening for Dementia: the Mini Mental State Exam (MMSE) and Modified Mini-Mental State Exam (3MS) Compared. J Clin Epidemiol 1997;50(4):377-383.

54. Teng EL, Chui HC. The Modified Mini-Mental State (3MS) Examination. J Clin Psychiatry 1987;48(8):314-318.

55. Marcantonio ER, Simon SE, Bergmann MA, et al. Delirium Symptoms in Post-acute Care: Prevalent, Persistent, and Associated with Poor Functional Recovery. Journal of the American Geriatrics Society 2003;51(1):4-9.

56. Kiely DK, Bergmann MA, Murphy KM, et al. Delirium Among Newly Admitted Postacute Facility Patients: Prevalence, Symptoms, and Severity. The Journals of Gerontology Series A, Biological sciences and Medical Sciences 2003;58(5):M441-445.

57. Inouye SK. Prevention of Delirium in Hospitalized Older Patients: Risk Factors and Targeted Intervention Strategies. Ann Med 2000;32(4):257-263.

58. McAvay GJ, Van Ness PH, Bogardus ST, Jr., et al. Older adults Discharged from the Hospital with Delirium: 1-year Outcomes. Journal of the American Geriatrics Society 2006;54(8):1245-1250.

59. Inouye SK. Delirium in Older Persons. The New England Journal of Medicine 2006;354(11):1157-1165.

60. Culp K, Mentes JC, McConnell ES. Studying Acute Confusion in Long-term Care: Clinical Investigation or Secondary Data Analysis Using the Minimum Data Set? Journal of Gerontological Nursing 2001;27(4):41-48.

61. Inouye SK. Delirium in Hospitalized Older Patients: Recognition and Risk Factors. Journal of Geriatric Psychiatry and Neurology 1998;11(3):118-125; discussion 157-118.

62. Inouye SK, van Dyck CH, Alessi CA, et al. Clarifying Confusion: The Confusion Assessment Method. A New Method for Detection of Delirium. Ann Intern Med 1990;113(12):941-948.

63. Wei LA, Fearing MA, Sternberg EJ, et al. The Confusion Assessment Method: A Systematic Review of Current Usage. J Am Geriatr Soc 2008.

64. Baldwin HBM, George J, Forsyth D, et al. Guidelines for the Prevention, Diagnosis and Management of Delirium in Older People in Hospital. British Geriatrics Society 2006.

65. Ely EW, Margolin R, Francis J, et al. Evaluation of Delirium in Critically Ill Patients: Validation of the Confusion Assessment Method for the Intensive Care Unit (CAM-ICU). Crit Care Med 2001;29(7):1370-1379.

66. Fick DM, Kolanowski AM, Waller JL, et al. Delirium Superimposed on Dementia in a Community-dwelling Managed Care Population: A 3-year Retrospective Study of Occurrence, Costs, and Utilization. J Gerontol A Biol Sci Med Sci 2005;60(6):748-753.

67. Parmelee PA, Katz IR, Lawton MP. Depression Among Institutionalized Aged: Assessment and Prevalence Estimation. Journal of Gerontology 1989;44(1):M22-29.

68. Heston LL, Garrard J, Makris L, et al. Inadequate Treatment of Depressed Nursing Home Elderly. Journal of the American Geriatrics Society 1992;40(11):1117-1122.

69. Weintraub D, Datto CJ, Streim JE, et al. Second-generation Issues in the Management of Depression in Nursing Homes. Journal of the American Geriatrics Society 2002;50(12):2100-2101; author reply 2101.

70. Datto CJ, Oslin DW, Streim JE, et al. Pharmacologic Treatment of Depression in Nursing Home Residents: A Mental Health Services Perspective. Journal of Geriatric Psychiatry and Neurology 2002;15(3):141-146.

71. Horgas AL, Tsai PF. Analgesic Drug Prescription and Use in Cognitively Impaired Nursing Home Residents. Nursing Research 1998;47(4):235-242.

72. McCurren C. Assessment for Depression Among Nursing Home Elders: Evaluation of the MDS Mood Assessment. Geriatric Nursing (New York, NY) 2002;23(2):103-108.

73. Lawton MP, Casten R, Parmelee PA, et al. Psychometric Characteristics of the Minimum Data Set II: Validity. Journal of the American Geriatrics Society 1998;46(6):736-744.

74. Snowden M, Sato K, Roy-Byrne P. Assessment and Treatment of Nursing Home Residents with Depression or Behavioral Symptoms Associated with dementia: A Review of the Literature. Journal of the American Geriatrics Society 2003;51(9):1305-1317.

75. American Geriatrics Society and American Association for Geriatric Psychiatry. Consensus Statement on Improving the Quality of Mental Health Care in U.S. Nursing Homes: Management of Depression and Behavioral Symptoms Associated with Dementia. Journal of the American Geriatrics Society 2003;51(9):1287-1298.

76. Ensrud KE, Blackwell T, Mangione CM, et al. Central Nervous System Active Medications and Risk for Fractures in Older Women. Archives of Internal Medicine 2003;163(8):949-957.

77. Kroenke K, Spitzer, R.L., . The PHQ-9: A New Depression Diagnostic and Severity Measure. Psychiatric Annals 2002;32:509-515.

78. Kroenke K, Spitzer RL, Williams JB. The PHQ-9: Validity of a Brief Depression Severity Measure. Journal of General Internal Medicine: Official Journal of the Society for Research and Education in Primary Care Internal Medicine 2001;16(9):606-613.

79. Klapow J, Kroenke K, Horton T, et al. Psychological Disorders and Distress in Older Primary Care Patients: A Comparison of Older and Younger Samples. Psychosomatic Medicine 2002;64(4):635-643.

80. Lowe B, Kroenke K, Herzog W, et al. Measuring Depression Outcome with a Brief Self-report Instrument: Sensitivity to Change of the Patient Health Questionnaire (PHQ-9). J Affect Disord 2004;81(1):61-66.

81. Ruo B, Rumsfeld JS, Hlatky MA, et al. Depressive Symptoms and Health-related Quality of Life: the Heart and Soul Study. JAMA : The Journal of the American Medical Association 2003;290(2):215-221.

82. Williams JW, Jr., Pignone M, Ramirez G, et al. Identifying Depression in Primary Care: A Literature Synthesis of Case-finding Instruments. General Hospital Psychiatry 2002;24(4):225-237.

83. Ell K, Unutzer J, Aranda M, et al. Routine PHQ-9 Depression Screening in Home Health Care: Depression, Prevalence, Clinical and Treatment Characteristics and Screening Implementation. Home Health Care Serv Q 2005;24(4):1-19.

84. Williams LS, Brizendine EJ, Plue L, et al. Performance of the PHQ-9 as a Screening Tool for Depression After Stroke. Stroke; A Journal of Cerebral Circulation 2005;36(3):635-638.

85. Johnston L, Reid A, Wilson J, et al. Detecting Depression in the Aged: Is There Concordance Between Screening Tools and the Perceptions of Nursing Home Staff and

Residents? A Pilot Study in a Rural Aged Care Facility. Aust J Rural Health 2007;15(4):252-256.

86. Ruckdeschel K, Katz J, Sullivan F, et al. Redesigning the Minimum Data Set: Depression. 2006 March, 2006; Puerto Rico.

87. Endicott J, Spitzer RL. A Diagnostic Interview: The Schedule for Affective Disorders and Schizophrenia. Arch Gen Psychiatry 1978;35(7):837-844.

88. Endicott J, Spitzer RL. Use of the Research Diagnostic Criteria and the Schedule for Affective Disorders and Schizophrenia to Study Affective Disorders. Am J Psychiatry 1979;136(1):52-56.

89. Parmelee PA, Lawton MP, Katz IR. Psychometric Properties of the Geriatric Depression Scale Among the Institutionalized Aged. Psychological Assessment: A Journal of Consulting and Clinical Psychology 1989;I:331-338.

90. Alexopoulos GS, Abrams RC, Young RC, et al. Cornell Scale for Depression in Dementia. Biological Psychiatry 1988;23(3):271-284.

91. Vida S, Des Rosiers P, Carrier L, et al. Depression in Alzheimer's Disease: Receiver Operating Characteristic Analysis of the Cornell Scale for Depression in Dementia and the Hamilton Depression Scale. Journal of Geriatric Psychiatry and Neurology 1994;7(3):159-162.

92. Sheikh JI YJ. Geriatric Depression Scale (GDS) Recent Evidence and Development of a Shorter Version. In: Brink T, editor. Clinical Gerontology: A Guide to Assessment and Intervention. New York: Haworth Press; 1986. p 165-173.

93. O'Donnell BF, Drachman DA, Barnes HJ, et al. Incontinence and Troublesome Behaviors Predict Institutionalization in Dementia. Journal of Geriatric Psychiatry and Neurology 1992;5(1):45-52.

94. Ballard C, Waite J. The effectiveness of atypical antipsychotics for the treatment of aggression and psychosis in Alzheimer's disease. Cochrane Database Syst Rev 2006(1):CD003476.

95. Katz IR, Jeste DV, Mintzer JE, et al. Comparison of Risperidone and Placebo for Psychosis and Behavioral Disturbances Associated with Dementia: A Randomized, Double-blind Trial. Risperidone Study Group. The Journal of Clinical Psychiatry 1999;60(2):107-115.

96. Tariot PN, Erb R, Podgorski CA, et al. Efficacy and Tolerability of Carbamazepine for Agitation and Aggression in Dementia. The American Journal of Psychiatry 1998;155(1):54-61.

97. Nyth AL, Gottfries CG. The Clinical Efficacy of Citalopram in Treatment of Emotional Disturbances in Dementia Disorders. A Nordic Multicentre Study. The British Journal of Psychiatry : The Journal of Mental Science 1990;157:894-901.

98. Fuller MA, Shermock KM, Secic M, et al. Comparative Study of the Development of Diabetes Mellitus in Patients Taking Risperidone and Olanzapine. Pharmacotherapy 2003;23(8):1037-1043.

99. Mustard CA, Mayer T. Case-control Study of Exposure to Medication and the Risk of Injurious Falls Requiring Hospitalization Among Nursing Home Residents. American Journal of Epidemiology 1997;145(8):738-745.

100. Burgio LD, Stevens A, Burgio KL, et al. Teaching and Maintaining Behavior Management Skills in the Nursing Home. The Gerontologist 2002;42(4):487-496.

101.   Rovner BW, Steele CD, Shmuely Y, et al. A Randomized Trial of Dementia Care in Nursing Homes. Journal of the American Geriatrics Society 1996;44(1):7-13.

102.   Cohen-Mansfield J, Werner P. Management of Verbally Disruptive Behaviors in Nursing Home Residents. The Journals of Gerontology Series A, Biological sciences and Medical Sciences 1997;52(6):M369-377.

103.   Cohen-Mansfield J, Marx MS, Rosenthal AS. A Description of Agitation in a Nursing Home. Journal of Gerontology 1989;44(3):M77-84.

104.   Cummings JL, Mega M, Gray K, et al. The Neuropsychiatric Inventory: Comprehensive Assessment of Psychopathology in Dementia. Neurology 1994;44(12):2308-2314.

105.   Dey AN. Characteristics of Nursing Home Residents: Data from the 1995 National Nursing Home Survey. In: Department of Health and Human Services, editor. DHH Pub No. (PHS)97-1250, Number 289; 1997.

106.   Teno JM. Now Is the Time to Embrace Nursing Homes as a Place of Care for Dying Persons. Journal of Palliative Medicine 2003;6(2):293-296.

107.   Reynolds K, Henderson M, Schulman A, et al. Needs of the Dying in Nursing Homes. Journal of Palliative Medicine 2002;5(6):895-901.

108.   Hanson LC, Henderson M, Menon M. As Individual as Death Itself: A Focus Group Study of Terminal Care in Nursing Homes. Journal of Palliative Medicine 2002;5(1):117-125.

109.   Engle VF, Fox-Hill E, Graney MJ. The Experience of Living-Dying in a Nursing Home: Self-reports of Black and White Older Adults. Journal of the American Geriatrics Society 1998;46(9):1091-1096.

110.   Kane RA. Definition, Measurement, and Correlates of Quality of Life in Nursing Homes: Toward a Reasonable Practice, Research, and Policy Agenda. The Gerontologist 2003;43:28-36.

111.   Saliba D, Schnelle JF. Indicators of the Quality of Nursing Home Residential Care. Journal of the American Geriatrics Society 2002;50(8):1421-1430.

112.   Jensen J, Lundin-Olsson L, Nyberg L, et al. Fall and Injury Prevention in Older People Living in Residential Care Facilities. A Cluster Randomized Trial. Annals of Internal Medicine 2002;136(10):733-741.

113.   Degenholtz H, Kane RA, Kivnick HQ. Care-related Preferences and Values of Elderly Community-based LTC Consumers: Can Case Managers Learn What's Important to Clients? The Gerontologist 1997;37(6):767-776.

114.   Gustafson D, Gustafson R. Re-engineering Long-term Care Quality of Life Improvement. In: HCFA, editor; 1996. p 1-19.

115.   Kane RA, Caplan AL, Urv-Wong EK, et al. Everyday Matters in the Lives of Nursing Home Residents: Wish for and Perception of Choice and Control. Journal of the American Geriatrics Society 1997;45(9):1086-1093.

116.   Spalding J. The Resident's Point of View: Analysis of Residents' Discussion. Washington DC: National Citizens Coalition for Nursing Home Reform; 1985.

117.   Tsuruoka H, Masuda S, Ukai K, et al. Hearing Impairment and Quality of Life for the Elderly in Nursing Homes. Auris, Nasus, Larynx 2001;28(1):45-54.

118.   Rothman ML, Hedrick S, Inui T. The Sickness Impact Profile as a Measure of the Health Status of Noncognitively Impaired Nursing Home Residents. Medical Care 1989;27(3):S157-167.

119. Neumann PJ, Kuntz KM, Leon J, et al. Health Utilities in Alzheimer's Disease: a Cross-sectional Study of Patients and Caregivers. Medical Care 1999;37(1):27-32.

120. Rabins. Alzheimer's Disease-related Quality of Life: Concepts and Methods in the Development of the ADRQL: An Instrument for Assessing Health-related Quality of Life in Persons with Alzheimer's Disease. J Ment Health Aging 1999;5:33-48.

121. Shannon G, Housen P, Simon B, et al. Mostly Yes, Mostly No: Are Simplest Responses the Best? Journal of the American Geriatrics Society 2006;54(s4):s140.

122. Housen P, Shannon G, Simon B, et al. What the Resident Meant to Say: Use of Cognitive Interviewing Techniques to Develop Questionnaires for Nursing Home Residents. The Gerontologist in press.

123. Rothschild JM, Bates DW, Leape LL. Preventable Medical Injuries in Older Patients. Archives of Internal Medicine 2000;160(18):2717-2728.

124. Agostini JV, Baker DI, Bogardus JST. Prevention of Falls in Hospitalized and Institutionalized Older People. Making Health Care Safer: A Critical Analysis of Patient Safety Practices. Rockville, MD: United States Agency for Healthcare Research and Quality & University of California San Francisco-Stanford Evidence-Based Practice Center; 2001. p 281-299.

125. Cali CM, Kiel DP. An Epidemiologic Study of Fall-related Fractures Among Institutionalized Older People. Journal of the American Geriatrics Society 1995;43(12):1336-1340.

126. Tinetti ME, Richman D, Powell L. Falls Efficacy as a Measure of Fear of Falling. Journal of Gerontology 1990;45(6):P239-243.

127. Marottoli RA, Berkman LF, Cooney LM, Jr. Decline in Physical Function Following Hip Fracture. Journal of the American Geriatrics Society 1992;40(9):861-866.

128. Magaziner J, Lydick E, Hawkes W, et al. Excess Mortality Attributable to Hip fracture in White Women Aged 70 years and Older. American Journal of Public Health 1997;87(10):1630-1636.

129. Cumming RG. Epidemiology of Medication-related Falls and Fractures in the Elderly. Drugs & Aging 1998;12(1):43-53.

130. American Medical Directors Association (AMDA). Falls and Fall Risk: Clinical Practice Guidelines. Columbia, MD; 1998.

131. IOM. Falls in Older Persons: Risk Factors and Prevention. In: Berg RL, Cassells JS, editors. The Second Fifty Years: Promoting Health and Preventing Disability. Washington, DC: National Academy Press; 1992. p 263-290.

132. Girman CJ, Chandler JM, Zimmerman SI, et al. Prediction of Fracture in Nursing Home Residents. Journal of the American Geriatrics Society 2002;50(8):1341-1347.

133. Kiely DK, Kiel DP, Burrows AB, et al. Identifying Nursing Home Residents at Risk for Falling. Journal of the American Geriatrics Society 1998;46(5):551-555.

134. Thapa PB, Brockman KG, Gideon P, et al. Injurious Falls in Nonambulatory Nursing Home Residents: A Comparative Study of Circumstances, Incidence, and Risk Factors. Journal of the American Geriatrics Society 1996;44(3):273-278.

135. Tinetti ME. Factors Associated with Serious Injury During Falls by Ambulatory Nursing Home Residents. Journal of the American Geriatrics Society 1987;35(7):644-648.

136. Rubenstein LZ, Josephson KR, Robbins AS. Falls in the Nursing Home. Annals of Internal Medicine 1994;121(6):442-451.

137. Cumming RG. Intervention Strategies and Risk-factor Modification for Falls Prevention. A Review of Recent Intervention Studies. Clinics in Geriatric Medicine 2002;18(2):175-189.

138. Rask K, Parmelee PA, Taylor JA, et al. Implementation and Evaluation of a Nursing Home Fall Management Program. Journal of the American Geriatrics Society 2007;55(3):342-349.

139. Ray WA, Taylor JA, Meador KG, et al. A Randomized Trial of a Consultation Service to Reduce Falls in Nursing Homes. JAMA : The Journal of the American Medical Association 1997;278(7):557-562.

140. Taylor JA. The Vanderbilt Fall Prevention Program for Long-term Care: Eight Years of Field Experience with Nursing Home Staff. Journal of the American Medical Directors Association 2002;3(3):180-185.

141. Ferrell BA, Ferrell BR, Osterweil D. Pain in the Nursing Home. Journal of the American Geriatrics Society 1990;38(4):409-414.

142. Parmelee PA, Smith B, Katz IR. Pain Complaints and Cognitive Status Among Elderly Institution Residents. Journal of the American Geriatrics Society 1993;41(5):517-522.

143. Sengstaken EA, King SA. The Problems of Pain and its Detection Among Geriatric Nursing Home Residents. Journal of the American Geriatrics Society 1993;41(5):541-544.

144. Weiner DK, Rudy TE. Attitudinal Barriers to Effective Treatment of Persistent Pain in Nursing Home Residents. Journal of the American Geriatrics Society 2002;50(12):2035-2040.

145. Cook AK, Niven CA, Downs MG. Assessing the Pain of People with Cognitive Impairment. International Journal of Geriatric Psychiatry 1999;14(6):421-425.

146. Won A, Lapane K, Gambassi G, et al. Correlates and Management of Nonmalignant Pain in the Nursing Home. SAGE Study Group. Systematic Assessment of Geriatric Drug Use Via Epidemiology. Journal of the American Geriatrics Society 1999;47(8):936-942.

147. McMillan SC, Tittle M, Hagan S, et al. Knowledge and Attitudes of Nurses in Veterans Hospitals About Pain Management in Patients With Cancer. Oncology Nursing Forum 2000;27(9):1415-1423.

148. Mrozek JE, Werner JS. Nurses' Attitudes Toward Pain, Pain Assessment, and Pain Management Practices in Long-term Care Facilities. Pain Management Nursing : Official Journal of the American Society of Pain Management Nurses 2001;2(4):154-162.

149. Sloman R, Ahern M, Wright A, et al. Nurses' Knowledge of Pain in the Elderly. Journal of Pain and Symptom Management 2001;21(4):317-322.

150. Cramer GW, Galer BS, Mendelson MA, et al. A Drug Use Evaluation of Selected Opioid and Nonopioid Analgesics in the Nursing Facility Setting. Journal of the American Geriatrics Society 2000;48(4):398-404.

151. Allcock N, McGarry J, Elkan R. Management of Pain in Older People Within the Nursing Home: A Preliminary Study. Health & Social Care in the Community 2002;10(6):464-471.

152. Teno JM, Weitzen S, Wetle T, et al. Persistent Pain in Nursing Home Residents. JAMA : The Journal of the American Medical Association 2001;285(16):2081.

153. Engle VF, Graney MJ, Chan A. Accuracy and Bias of Licensed Practical Nurse and Nursing Assistant Ratings of Nursing Home Residents' Pain. The Journals of Gerontology Series A, Biological Sciences and Medical Sciences 2001;56(7):M405-411.

154. Parmelee PA. Pain in Cognitively Impaired Older Persons. Clinics in Geriatric Medicine 1996;12(3):473-487.
155. Scherder E, Bouma A, Borkent M, et al. Alzheimer Patients Report Less Pain Intensity and Pain Affect Than Non-demented Elderly. Psychiatry 1999;62(3):265-272.
156. Bergh I, Sjèostrèom B. A Comparative Study of Nurses' and Elderly Patients' Ratings of Pain and Pain Tolerance. Journal of Gerontological Nursing 1999;25(5):30-36.
157. Blomqvist K, Hallberg IR. Pain in Older Adults Living in Sheltered Accommodation-- Agreement Between Assessments by Older Adults and Staff. Journal of Clinical Nursing 1999;8(2):159-169.
158. Feldt KS, Ryden MB, Miles S. Treatment of Pain in Cognitively Impaired Compared with Cognitively Intact Older Patients with Hip-fracture. Journal of the American Geriatrics Society 1998;46(9):1079-1085.
159. Hovi SL, Lauri S. Patients' and Nurses' Assessment of Cancer Pain. European Journal of Cancer Care 1999;8(4):213-219.
160. Morrison RS, Siu AL. A Comparison of Pain and its Treatment in Advanced Dementia and Cognitively Intact Patients with Hip Fracture. Journal of Pain and Symptom Management 2000;19(4):240-248.
161. Oberle K, Wry J. Pain, Anxiety and Analgesics: A Comparative Study of Elderly and Younger Surgical Patients. Canadian Journal on Aging 1990;9:13-22.
162. American Geriatrics Society Panel on Persistent Pain in Older Persons. The Management of Persistent Pain in Older Persons. Journal of the American Geriatrics Society 2002;50:S205-244.
163. Department of Veterans Affairs. VHA Directive 2003-021: Pain Management. 2003.
164. Ferrell BA, Ferrell BR, Rivera L. Pain in Cognitively Impaired Nursing Home Patients. Journal of Pain and Symptom Management 1995;10(8):591-598.
165. Weiner D, Peterson B, Ladd K, et al. Pain in Nursing Home Residents: An Exploration of Prevalence, Staff Perspectives, and Practical Aspects of Measurement. The Clinical Journal of Pain 1999;15(2):92-101.
166. Wynne CF, Ling SM, Remsburg R. Comparison of Pain Assessment Instruments in Cognitively Intact and Cognitively Impaired Nursing Home Residents. Geriatric Nursing (New York, NY) 2000;21(1):20-23.
167. Krulewitch H, London MR, Skakel VJ, et al. Assessment of Pain in Cognitively Impaired Older Adults: a Comparison of Pain Assessment Tools and Their Use by Nonprofessional Caregivers. Journal of the American Geriatrics Society 2000;48(12):1607-1611.
168. Herr KA, Mobily PR. Comparison of Selected Pain Assessment Tools for Use with the Elderly. Applied Nursing Research: ANR 1993;6(1):39-46.
169. Manz BD, Mosier R, Nusser-Gerlach MA, et al. Pain Assessment in the Cognitively Impaired and Unimpaired Elderly. Pain Management Nursing: Official Journal of the American Society of Pain Management Nurses 2000;1(4):106-115.
170. Scherder EJ, Bouma A. Visual Analogue Scales for Pain Assessment in Alzheimer's Disease. Gerontology 2000;46(1):47-53.
171. Cadogan MP OEM, Lorenz KA, Jones M, Yosef J, Hascall T, Simon B, Harker JO, Ferrell B, Saliba D,. The Relationship of Reported Pain Severity to Perceived Effect on Function of Nursing Home Residents. Journal of Gerontology: Medical Sciences in press.
172. Feldt KS. The Checklist of Nonverbal Pain Indicators (CNPI). Pain Management Nursing : Official Journal of the American Society of Pain Management Nurses 2000;1(1):13-21.

173. Hurley AC, Volicer BJ, Hanrahan PA, et al. Assessment of Discomfort in Advanced Alzheimer Patients. Research in Nursing & Health 1992;15(5):369-377.

174. Kaasalainen S, Middleton J, Knezacek S, et al. Pain and Cognitive Status in the Institutionalized Elderly: Perceptions & Interventions. Journal of Gerontological Nursing 1998;24(8):24-31; quiz 50-21.

175. Ferrell BA, Stein WM, Beck JC. The Geriatric Pain Measure: Validity, Reliability and Factor Analysis. J Am Geriatr Soc 2000;48(12):1669-1673.

176. Von Korff M, Gruman J, Schaefer J, et al. Collaborative Management of Chronic Illness. Annals of Internal Medicine 1997;127(12):1097-1102.

177. Bogardus ST, Jr., Bradley EH, Tinetti ME. A Taxonomy for Goal Setting in the Care of Persons with Dementia. Journal of General Internal Medicine : Official Journal of the Society for Research and Education in Primary Care Internal Medicine 1998;13(10):675-680.