

**On-Time Prevention of Pressure Ulcers:
Partnering With Quality Improvement Organizations
Final Report
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EXECUTIVE SUMMARY

Purpose: The purpose of the project “On-Time Quality Improvement in Long Term Care” (On-Time), developed by the Agency for Healthcare Research and Quality (AHRQ) with support from the California Health Care Foundation (CHCF), was to reengineer the nursing home’s workflow processes around pressure ulcer (PrU) prevention and integrate health information technology into those processes. The project was designed to bridge the gap between staff knowledge and staff practice, to facilitate good and consistent preventive care practices, and to target resources to those at high risk of developing PrUs.

Scope: We partnered with four Quality Improvement Organizations (QIOs) and 21 nursing homes (approximately 2,500 beds) to implement an evidence-based practice quality change strategy developed in the “Real Time Optimal Care Plans for Nursing Home QI” grant (U18 HS13696) (“Real-Time”) funded by AHRQ.

Methods: The project team, working with QIO partners and provider facilities, used a process established in “Real-Time” to redesign workflow quickly (rapid cycle improvement) and adopt process change. On-Time implementation incorporated:

- Core data elements developed and refined over a 2-year period by 11 pilot facilities to streamline documentation processes and incorporate key measures of quality for certified nursing assistant (CNA), wound nurse, and Care Team use.
- Feedback reports for improved care planning and clinical decisionmaking. Five weekly reports were created using CNA data: (1) completeness report for CNA documentation; (2) nutrition report; (3) behavior report; (4) “trigger” report that identified residents at high risk of PrU formation; and (5) priority report that provided an overall summary. Each report displayed resident-specific information for each unit.
- Clinical workflow redesign strategies that improved operational efficiencies, improved communication among clinical team members, and reduced PrU incidence.

Results: Results were achieved in clinical outcomes, workflow efficiencies, and staff experience. Overall, there was a 13 percent reduction in the Centers for Medicare & Medicaid Services (CMS) high-risk PrU quality measure 6 months postimplementation. Facilities with a high level of implementation had a 30.5 percent decline (from 13.1% to 9.1%) in the PrU quality measure and a 42.5 percent decline in in-house PrU rates (from 4% to 2.3%).

In all facilities, CNA documentation was streamlined and CNA documentation completeness increased. One-third (67%) of nursing homes achieved a high to medium level of implementation. In these facilities, communication among care team members improved, staff experience was positive, and time to compile reports for State regulators and the CMS Minimum Data Set was reduced.

Factors associated with high and medium levels of implementation were a designated project lead committed to making On-Time implementation a priority, interest in building the skills of front-line staff (including CNAs), multidisciplinary team participation, various team members using the On-Time reports, and process redesign to integrate On-Time reports into existing meetings and implement new processes, such as a 5-minute stand-up meeting with dietary staff and CNAs.

PURPOSE

The purpose of the project “On-Time Quality Improvement in Long Term Care,” a new quality improvement (QI) program for nursing homes developed by the Agency for Healthcare Research and Quality (AHRQ) with support from the California Health Care Foundation (CHCF), was to reengineer the nursing home’s workflow processes around pressure ulcer (PrU) prevention and integrate health information technology (HIT) into those processes. The goal was to partner with multidisciplinary teams in each nursing home to reduce redundant certified nursing assistant (CNA) documentation across disciplines, reduce paperwork, improve accuracy of information, and improve communication among multidisciplinary care teams. The project was designed to bridge the gap between staff knowledge and staff practice, to facilitate good and consistent preventive care practices, and to target resources to those at high risk of developing PrUs.

Specific objectives were to (1) partner with Quality Improvement Organizations (QIOs) and more than 20 nursing homes to implement an evidence-based practice quality change strategy developed in the “Real Time Optimal Care Plans for Nursing Home QI” grant (U18 HS13696) (“Real-Time”) funded by AHRQ, and (2) track the impact of this strategy on the rate of PrUs acquired by high-risk residents and on workflow in key operational processes: documentation, multidisciplinary team communication, and care planning.

SCOPE

Background and Context

The U.S. Department of Health and Human Services launched the Nursing Home Quality Initiative in 2002. In the December 23, 2004, report from the Nursing Home Quality Initiative, the most negative statistic was that the percentage of residents with PrUs increased slightly since measurements began in June 2002, from 8.5 percent to 8.7 percent. The rates persisted at about 13 percent for residents at high risk. High rates of PrUs in nursing homes remain despite major efforts by the Centers for Medicare & Medicaid Services (CMS) and training and education efforts by QIOs across the country to reduce these rates. Reduction in PrUs remains a goal of the 8th scope of work for QIOs under contract with CMS. It was clear that a more effective strategy was needed to implement best practices in nursing homes and to support integration of best practices into daily workflow.

Preliminary successes of project activities in “Real-Time” resulted in changes to daily workflow and use of information within and among facilities. As a result of these interventions, there were large decreases in PrU rates among “Real-Time” project participants (averaging 33%) and great enthusiasm from participating staff. The “Real-Time” project developed and implemented a quality improvement strategy with 11 nursing homes. Project activities integrated quality improvement into daily operations to increase workflow efficiencies and simultaneously improve resident care. Project steps included the following:

- Standardized CNA documentation elements and definitions across facilities (to the extent that similar information was gathered).
- Streamlined CNA documentation within each facility: consolidated documentation to a small number of forms and eliminated redundant documentation.

- Targeted specific education to one or more staff members when completeness reports indicated that their documentation in some clinical assessment area was inadequate.
- Consolidated resident information via standard reports that reduced the time spent compiling information for care team meetings and outside agency reporting.

The “Real-Time” project provided the foundation for HIT implementation by standardizing data elements, developing report templates, and redesigning care processes. These data and report definitions served as requirements for each facility’s HIT vendor as we finalized participation in the On-Time project.

Successes within “Real-Time” project facilities suggested potential benefits in widespread implementation of the “Real-Time” model in other nursing home facilities. The On-Time project was the next component of our strategy for dissemination in long-term care. Since QIOs work with nursing homes to improve quality, including PrU prevention, they were an ideal partner to help improve quality of care in nursing homes, to provide access to facilities for participation, and to join with State-level stakeholders to reach consensus on standardized data elements. The project team—a team from International Severity Information Systems (ISIS) and Health Management Strategies (HMS)—has been working together since 1995 on clinical practice improvement studies, best practices research, and implementation strategies for PrU prevention and treatment in long-term care facilities.

Settings

We established and coordinated a facility recruitment plan and process with each QIO partner (California, Arizona, Idaho, and North Carolina). A packet of materials was prepared to introduce a facility to the project. We used multiple strategies to answer questions and recruit providers: group conference calls, individual calls, and presentations at several conferences. In addition, we facilitated conversations with HIT vendors if a provider requested.

The eligibility criteria for participating facilities were:

- Located in States of partnering QIOs.
- PrU rate of at least 8 percent (high-risk resident PrU rate based on the CMS quality measure (QM)).
- Interest in redesigning CNA documentation and workflow to reduce PrU rates.
- Willing to invest in HIT: Facilities without current HIT capabilities had to be willing to invest in an HIT solution that automated CNA documentation and produced On-Time reports.

Recruitment efforts took place from September 2005 through September 2006. A total of 25 facilities provided verbal or written intent to participate, but 4 of these facilities had to withdraw at the last minute because of facility closure (1), corporate management team turnover (2), and lack of capital to invest in HIT (1) (see Table 1).

Table 1. Recruitment Summary

	CA	AZ	ID	NC	MD/DC	TOTAL
Intent to participate (verbal or written)						
# facilities	16	2	2	2	3	25
# beds	1,759	303	225	250	683	3,220
Actual participation (formal project agreement)						
# facilities	16	2	1	2	0	21
# beds	1,759	303	110	250	0	2,422

Participants

There were 21 nursing home facilities and 4 QIOs that participated. To formalize expectations and roles, each participant signed formal agreements with the project team.

QIOs. A Memorandum of Understanding (MOU) was signed between ISIS and each QIO. The MOU included:

- Overview of purpose and expected benefits of the project.
- Overview of QIO roles and responsibilities. For example, each QIO was to integrate the On-Time project into CMS 8th scope of work requirements, facilitate selection and recruitment of participant facilities, facilitate discussions with stakeholders on reporting requirements, participate in conference calls with participating facilities and conference calls to monitor progress and to coordinate the project, agree to provide feedback to the ISIS team about intervention experience, and provide aggregate information on PrU quality measure data from identified comparison facilities. The QIO was expected to commit at least 10 percent full-time equivalent to the project over an 18-month period.
- Specific ISIS team roles and responsibilities. For example, the ISIS team worked closely with the QIOs to coordinate facility selection, develop work groups in each State of five or six facilities, and work with the QIOs to transfer knowledge of On-Time techniques through joint conference calls and in-person sessions. ISIS worked with each QIO to develop a strategy to integrate the On-Time approach into its future workplan.

Nursing Homes. A Letter of Intent and a Project Participation Agreement were signed by each participating nursing home. In the agreement each facility agreed to the following:

- Express commitment and high level of interest in an innovative QI effort for PrU prevention.
- Commit facility resources (staff time) to promote a team culture of accountability, implement a low-cost technology solution, and achieve expected returns.
 - Assign project point person and participate in routine conference calls.
 - Form implementation team, including CNAs and multidisciplinary staff.
 - Participate in activities to assess impact: Participate in data collection pre- and postimplementation, including: staff feedback, unit-specific PrU incidence, and workflow measures.
- Use existing HIT or invest in low-cost technology.

METHODS

Study Design

The project team, working with QIO partners and provider facilities, used a process established in “Real-Time” to redesign workflow quickly (rapid cycle improvement) and to adopt process change. We incorporated:

- Core data elements developed and refined over a 2-year period by 11 pilot facilities to streamline documentation processes and incorporate key measures of quality for CNA, wound nurse, and Care Team use.
- Feedback reports for improved care planning and clinical decisionmaking. Five weekly reports were created using CNA data: (1) completeness report for CNA documentation; (2) nutrition report; (3) behavior report; (4) “trigger” report that identified residents at high risk of PrU formation; and (5) priority report that provided an overall summary. Each report displayed resident-specific information for each unit.
- Clinical workflow redesign strategies that improved operational efficiencies, improved communication among clinical team members, and reduced PrU incidence.

The On-Time approach is designed to include CNAs in the redesign of workflow and to focus on strengthening relationships across disciplines and improving effectiveness of multidisciplinary team collaboration. The project team worked with each facility team to facilitate the migration from a paper document environment toward a data culture environment and to promote use of timely clinical reports by multidisciplinary teams for identifying high-risk residents and planning care.

Data Collection and Sources

The data collection plan was part of the implementation plan at each site. For the clinical reports, data were collected from CNA daily documentation forms and used in the generation of feedback reports by the HIT system at each facility. For the impact assessment, quality measure data were collected from the CMS Nursing Home Compare Web site quarterly, existing facility reporting mechanisms were used to collect PrU incidence, and quality improvement teams at each facility gathered staff feedback on documentation and workflow changes as part of the On-Time program. The project team provided standardized data collection forms to assist staff in tracking staff feedback and impact on workflow. Baseline data were collected and submitted by each facility prior to redesign efforts and ongoing data were collected at 6-month and 12-month intervals postimplementation. Data included:

- Clinical outcomes: PrU rates (incidence and prevalence)
- CNA documentation measures: # forms, completeness, and accuracy
- Workflow measures: team communication, time spent gathering information
- Staff experiences: positive and negative feedback regarding process changes

Additional sources of information regarding the implementation experience were the ongoing conference calls with facility and QIO team members. Information gathered on these calls was used to identify implementation obstacles and lessons learned throughout the implementation process.

Key Components of On-Time

The key components of implementing the On-Time program at a facility are:

- Providing introductory and educational materials.
- Assessing current CNA documentation, streamlining CNA documentation, incorporating best practice elements into daily charting, and consolidating CNA documentation into one form.
- Establishing audit and feedback processes to confirm CNA information completeness and accuracy.
- Integrating weekly reports that identify residents at risk into care planning processes and structures.

In addition, the project team provided ongoing project facilitation support to each facility team. Each of these components is described in more detail below.

Provide Project Facilitation

At each nursing home facility, we established multidisciplinary teams, consisting of the director of nursing (DON) or administrator, Minimum Data Set (MDS) nurse and wound care nurses, nurse-aides, dietitians, diet technicians, staff development, QI coordinator, social services, and restorative care team members. By involving front-line staff in the redesign of workflow and implementation processes, the project aimed to strengthen collaborative relationships and improve communication and access to information across disciplines. These implementation teams championed the new clinical documentation and workflow redesign and provided daily leadership throughout the implementation process.

Ongoing biweekly conference calls were held with each facility team to provide technical assistance on how to facilitate workflow redesign at each facility (standardize data elements, consolidate forms, and use clinical reports in daily work to improve resident outcomes) and to review timelines, accomplishments of work steps, and next steps to be accomplished.

- In first quarter (Q1) work with a facility, weekly conference calls were held with the facility implementation team to address the following: Introduce and review “Real-Time” reports and prototype forms; discuss strategies for integrating “Real-Time” reports (Nutrition, Weight Summary, Incontinence, and Behavior) into workflow; redesign facility documentation forms and review with team; assess workflow; plan to complete process observation forms and gather feedback from staff on workflow; plan for pilot test of documentation changes; establish process to review feedback from pilot test on form use; and plan full facility rollout.
- In Q2-Q3 work with a facility, there were monthly calls to provide ongoing support for facility implementation teams and site-specific consultation and to develop a plan to use additional reports, e.g., high-risk PrU indicator and PrU tracking.
- In Q2-Q6 work with facilities, there were regular weekly calls with all facility teams to provide ongoing support and discuss strategies to integrate On-Time into care planning.

In addition, quarterly conference calls were held for all participating QIOs to share learning and progress across States. Also, there was a conference call with each QIO and stakeholder group to

review and discuss standard data elements and stakeholder requirements for documentation and quality reporting.

There was one face-to-face meeting with QIOs and selected participants from nursing facilities. At the 2-day meeting with QIOs and selected facility participants, we (1) discussed and compared experiences and outcomes to date; (2) discussed issues and problems in the course of the project and ways they could be addressed; and (3) identified any changes in the project approach.

A project team facilitator served as liaison between the facility and its HIT vendor (including Digital Pen Systems, Optimus, and Vernon software development team) for workflow and clinical questions. The project team gave technical assistance to the nursing homes' software vendors to develop or adapt an electronic decision support system that:

- Used the documentation electronically captured by CNAs from standardized clinical documentation forms and downloaded to the vendor's Web site;
- Stored this information in a database and analyzed it; and
- Supported feedback to facilities in weekly reports that met On-Time specifications.

The project team identified two low-cost IT options for facilities to consider if they did not have an existing clinical IT system: the Digital Pen and Paper solution and Optical Character Recognition/Optical Marker Recognition (OCR/OMR). The Digital Pen and Paper is a customizable solution to transfer data from paper to a centralized database. It uses handwriting recognition and checkbox processing to manage documentation workflow with accurate capture of information in a digital format for processing. OCR/OMR is a data and document capture software solution that involves reading text from paper and translating the images into a form that the computer can manipulate. Data can be managed at the facility level or outsourced to a service bureau.

In summary, the project team provided the following support:

- Collaborated with multidisciplinary implementation teams at each participating facility.
- Helped to standardize and consolidate daily documentation for CNA staff, nurse care plans, and wound nurses.
- Helped to implement a decision support system for collection, processing, and use of clinical data to support resident care planning based on "Real-Time" results: Nutrition, incontinence, behaviors, high-risk assessment for PrU development, and PrU tracking data elements and reports.
- Helped to integrate reports for clinical teams into care planning processes and redesigned clinical workflow.
- Tracked the impact of the quality change strategy on PrU development in high-risk residents and on workflow efficiencies:
 - Conducted baseline assessment and assembled ongoing data every 3 months.
 - Assessed impact on workflow.

- Assessed learning of providers and QIOs: Assessed impact of AHRQ/QIO collaborative, identified areas of learning, and decided how and where to incorporate new techniques and methods into future plans.
- Suggested sustainability plans for QIO and nursing home facilities and expansions to other nursing homes in participating provider organizations, other nursing homes in the State, other clinical areas and QMs, and other QIOs.

The facility teams committed the following time:

- Administrator and DON: 1 to 2 days to confirm project plans, discuss HIT options, and finalize HIT agreement with vendor.
- Multidisciplinary team: weekly conference calls for the first 3 months lasting 30 minutes to 1 hour and biweekly calls for the next 12 months.
- Staff development: 4 hours per week for the first 2 to 3 months to support initial implementation.
- Consultants: 1-day meeting with the consultants on site.

Provide Introductory and Educational Materials

The project team prepared orientation materials to include information on project purpose, scope, benefits, expectations of providers, overall workplan and timeline, sample documentation forms and reports with explanations of use, and workflow redesign strategies.

Streamline and Standardize CNA Documentation Within Each Facility

Documentation forms currently used by CNAs were reviewed, cross-referenced against regulatory requirements, facility care protocols, and best practice elements, and compared to the On-Time CNA form prototype developed in “Real-Time.” Facility teams were guided through a self-assessment of CNA documentation at their facility by an AHRQ-funded project coordinator. The result of this process was the development of a new CNA form designed to include best practice elements and to eliminate both redundancy and documentation of nonessential items.

The new documentation allowed CNAs to spend less time filling out redundant paperwork and focused their documentation efforts on obtaining more precise information that was relevant to key risk factors and care planning.

Ultimately, CNAs transitioned away from paper forms and began HIT, either currently in place or newly selected by the facility, to document daily charting. The project coordinators worked with facility vendors to ensure that elements of the On-Time program were incorporated into the HIT application; this included data elements for CNA documentation and On-Time reports needed to support program implementation.

Use Reports for CNA Documentation Audit and Establish Feedback Process With CNAs

Using the HIT selected by each nursing home, CNAs were able to capture and store data as they documented daily care on each shift; data were stored in a database and information was summarized in clinical reports to be used by multiple disciplines providing resident care.

Since the On-Time PrU prevention reports were generated completely from CNA daily documentation, it was important to implement the Completeness Report first to audit CNA documentation. Teams became familiar with the Completeness Report first to manage documentation review. The Completeness Report summarized CNA documentation completeness and accuracy and served as a monitoring tool for early recognition of CNA documentation patterns. Medical records staff were able to use this report to identify incomplete CNA charting and staff educators were able to review the report quickly to determine areas of documentation that may require additional in-service and guidance. Staff educators played a key role in orienting staff to changes in documentation, identifying issues, and providing ongoing support of the entire process. Once high CNA documentation completeness rates were sustained, teams could review other reports with CNA staff to confirm report accuracy.

Integrate and Use Reports To Enhance Communication Across Disciplines and Promote Teamwork

The On-Time reports, designed with input from multiple disciplines, identified residents at highest risk for PrU development, showed trends in multiple outcomes for these residents over time, and helped staff monitor the effectiveness of care in a timely fashion. The project team focused discussions with the facility multidisciplinary clinical team on each report, including an overview of how it is used in care planning and examples of how to incorporate On-Time reports into weekly practices of multidisciplinary clinical team members.

The staff that typically used these reports were the director of nursing services (DNS or DON), assistant DON or DNS, MDS nurse, unit manager, charge nurse, dietitian, wound nurse, staff development, social services, and CNAs. The reports were used in existing meetings, e.g., Weight Loss Committee and Skin Team, as well as in new processes such as 5-minute stand-up meetings between dietitians and CNAs. These were examples only; the process could be customized according to each nursing home's goals and objectives.

The On-Time reports provided both information about specific residents and a snapshot of the facility's total resident population. Trend analyses provided by reports enabled clinicians to be more proactive in their care planning approach. For example:

Nutrition Report. This report was used to identify and monitor residents with decreased meal intake or weight loss, both of which are indicators for high risk of PrU development based on the guidelines. The weekly meal intake for the past 4 weeks was trended for each resident. Weight changes for the past 30, 90, and 180 days were calculated. This report helped staff answer the question, How many residents trigger for high risk (decreased meal intake of 2 meals \leq 50% at least once during report week AND weight loss for report week)? Medium risk (decreased meal intake OR weight loss)?

Behavior Report. This report was used to summarize resident behavior trends by nursing unit and behaviors by resident by nursing station. This report helped nursing and social services staff review CNA observations of behaviors, identify changes in resident behaviors, understand patterns across shifts, and support the nurse behavior assessment and documentation processes.

Trigger Summary Report. High Risk for PrU Development. This report was used to monitor the number of PrU triggers by resident. It enabled staff to compare the current week to the previous week.

Priority Report. This report was used to identify and monitor priority residents, e.g., residents with changes from previous week, including decreased meal intake and weight loss; change in behaviors; increased bladder incontinence; and new PrU or worsened ulcer. It also monitored residents with red or open areas.

The initial focus of report use was on trended clinical information because subtle changes in resident status often go undetected as clinicians focus on day-to-day resident health status. The On-Time reports can be used to augment information generated by existing facility reports and processes to promote early identification of residents at risk. Staff were educated on each report and teams discussed potential opportunities for use. It was during this phase of the program that teams considered integration of On-Time reports into existing facility team meetings or determined whether there were opportunities for new communication forums using specific On-Time reports.

Another key initiative of the On-Time program to integrate report use and facilitate communication across disciplines was the implementation of 5-minute stand-up meetings with CNA staff, a process introduced during the pilot project. While facilities already may have a similar briefing process in place, the On-Time approach was distinctive in keeping the meeting brief, focused, and data driven. In these meetings, Nutrition Report results, which displayed residents at high or medium nutritional risk, were reviewed with CNA staff by the dietitian or nurse to confirm accuracy of report results. Once results were verified, clinicians could confirm that appropriate care plan interventions were in place and establish followup plans with front-line staff. In the 5-minute stand-up meetings with CNA staff, the teams reviewed the Nutrition Report, stayed focused on resident meal intake, and kept meetings brief to minimize time CNAs were away from direct resident care.

Measures

The facility teams tracked measures related to four areas: clinical outcomes, CNA documentation, workflow, and staff satisfaction. Table 2 presents the measures that were used to track the impact of the project. We collected baseline and postimplementation measures. Postimplementation assessment occurred every 3 months. The project team compared change in PrU QMs in participating facilities with national norms.

Table 2. Measures To Track Impact

	Area of Impact	Measure	Data Collection Strategy/Tool	Timing
1	Clinical outcomes	<ul style="list-style-type: none"> • Incidence of new in-house-acquired PrUs • CMS QMs - related to PrU (high-risk and low-risk residents) 	<p>Existing facility reports</p> <p>CMS Nursing Home Compare</p>	<p>Quarterly</p> <p>Quarterly</p>
2	CNA Documentation	<ul style="list-style-type: none"> • # forms used for CNA daily documentation • Completeness of CNA documentation • Accuracy of CNA documentation 	Staff feedback	Quarterly
3	Workflow	<ul style="list-style-type: none"> • Communication improvements <ul style="list-style-type: none"> ○ CNA to dietary ○ CNA to nurse ○ Nurse to dietary • Time spent aggregating and summarizing information (e.g., MDS information, regulatory reports, and family conferences) 	<p>Workflow analysis in conjunction with facility implementation team</p> <p>Staff feedback</p>	Post-implementation
4	Staff experience	<ul style="list-style-type: none"> • CNAs valued as member of team • Staff feedback on impact of new processes 	Staff feedback	Post-implementation

Limitations

There were some limitations to the “On-Time” quality improvement approach. Facility participation required both an interest in improving care and either an existing HIT system for CNA documentation or the ability to invest at minimum in a low-cost HIT solution (at least \$5,000). The participation requirements biased the selection to those nursing homes that could comply. Many of the participating facilities had experience in quality improvement and working on process changes with a multidisciplinary team approach. Since the participating facilities all had a high-risk PrU QM of at least 8 percent, the facilities provided an appropriate sample to assess the dissemination of a previously developed intervention approach in a provider setting with opportunity for improvement.

RESULTS

The results are reviewed in three sections: implementation progress, levels of facility implementation, and outcomes.

Implementation Progress

Implementation started in a phased approach in the second quarter of 2006, with facilities continuing to start implementing in 2007 (see Table 3).

Table 3. Facility Implementation Start Date

Start Date	CA	AZ	ID	NC	Total
Q2 '06	4	2			6
Q3 '06	6			1	7
Q4 '06	5			1	6
Q1 '07			1		1
Q3 '07	1				1
Total	16	2	1	2	21
Facilities discontinued	2*		1*		3*

*These facilities are in the process of deciding whether to reengage in the project. The main consideration is whether they have the corporate and facility leadership capacity to support implementing On-Time.

On average, it took the project team 4 to 6 weeks to support a facility team through the initial stage of addressing CNA documentation completeness issues and questions related to the new documentation form. Then, on average, it took the project team 6 to 8 weeks to support a facility team gaining basic understanding of clinical reports and deciding where and how to integrate reports into daily practice. This implementation cycle was shortened by 3 to 4 weeks for all facilities joining from Q3 2006 onward because sharing the experience of the initial six facilities accelerated the standardized documentation process for the other facilities.

Levels of Facility Implementation

During Q4 2007, the project facilitators assessed the level of implementation at each facility (see Table 4). Two-thirds (67%) of facilities demonstrated a high or moderate level of implementation.

Table 4. Level of Facility Implementation Grouped by Start Date

Level of Facility Implementation	Q2 2006	Q3 2006	Q4 2006	Q1 2007	Q3 2007	Total	% Total
High	4	2	3			9	43%
Moderate	2	1	1		1	5	24%
Low	0	4	2	1		7	33%
Total (21 facilities)	6	7	6	1	1	21	

The assessment of implementation level was based on facilitator and team collaborations on conference calls, onsite visits, feedback, and progress reports from team members as part of their QI process, and discussions at the all-facility meeting. Several characteristics were used as criteria in the assessment, specified in Table 5 below.

Table 5. Characteristics of High, Moderate, and Low Levels of Implementation

	Major Work Step	Characteristic	High	Moderate	Low
1	Project preparation	Designated a project lead	X	X	X
		Ongoing collaboration with project facilitator	X	X	
		Multidisciplinary team participation	X	X	
2	CNA form redesign	Implemented new CNA form	X	X	X
3	IT installation and testing	IT installation	X	X	X
		Staff assigned to manage use of IT and provide ongoing support	X	X	
		Staff assigned to troubleshoot internal technology issues	X		
4	Review CNA documentation completeness and accuracy	Weekly monitoring/audit process in place	X	X	X
		Established process to follow up on incomplete and/or inaccurate CNA documentation; assigned responsibility and followup	X	X	
5	On-Time report use weekly or biweekly or monthly	Plan for using On-Time reports	X	X	
		Clear assignments for team members	X		
		Use of On-Time reports by various team members	X		
6	Workflow and process improvement initiatives	Integrated On-Time reports into existing meetings	X		
		Implemented new processes, such as:			
		o 5-minute stand-up meetings with CNAs			
		o Structured end-of-shift report by CNAs to nurses (AHRQ format or other)			
		o Primary role in project by CNA team leaders			
7	Monitor progress and assess impact	Participate in collaborative multifacility workgroups	X	X	
		Participate in assessing impact	X	X	

In summary, facilities with a *high level of implementation* compared to facilities with a *low level of implementation* took the following steps:

- Designated a project lead – collaborated with project facilitator to support team participation and confirm that On-Time activities were carried out.
- Had a multidisciplinary team participate in On-Time activities.
- Adopted processes for implementing On-Time within own facility process and structure; made clear assignments for team members.
- Had various team members use On-Time reports.
- Integrated On-Time reports into existing meetings and implemented new processes, such as 5-minute stand-up meetings with dietary staff and CNAs.

Facilities with a *moderate level of implementation* took clear steps to get started implementing On-Time, but did not fully integrate On-Time reports into the daily work of the multidisciplinary team. These facilities focused on the first step of implementing the redesigned CNA documentation form, used the Completeness Report to improve CNA documentation completeness and accuracy, and started to make a plan to use other reports.

Facilities with a *low level of implementation* did not commit leadership or team time to implement On-Time and were not compliant with project activities. Three of the seven low implementers are the facilities that discontinued the project and are in the process of deciding whether to reengage. The remaining four low implementers did not have leadership that believed that On-Time was a priority and did not participate on project conference calls or commit to implementation. Another common characteristic of facilities with a low level of implementation that prohibited integration of clinical reports into daily work was challenges implementing HIT due to lack of IT knowledge internally or lack of onsite IT support.

Specific differences follow:

- **Project Lead, Team Composition, and Participation**
Establishing a core project team early in the project that included multiple disciplines and a designated project leader was key to successful implementation of program activities and the facility's ability to sustain On-Time processes.

Facilities with a *high level of implementation* had a project leader who was committed to full implementation of project activities to achieve results and team members who were included in all aspects of the project. High-performing facilities had a dedicated core team that took responsibility for project success and participated on scheduled team calls with the ISIS facilitator. In the facilities with a high level of implementation, several members of a multidisciplinary team were involved, including administrator and DON, MDS nurse, dietitian or diet technician, staff development, and CNAs.

In facilities with *moderate and low levels of implementation*, the effort was led by the DON and staff development and project responsibilities were not distributed across a multidisciplinary team. In facilities with a *low level of implementation*, a multidisciplinary project team was not in place. Typically, the project leader was the only

one who participated on facility calls with the project facilitator; it was difficult to implement the program with this structure in place.

- **Streamlining and Standardization of CNA Documentation**

All facilities streamlined and standardized CNA documentation and implemented the new documentation process. The difference between facilities with high and low levels of implementation was that in the facilities with a *high level of implementation*, a full complement of staff participated in managing the new workflow and technology. High-performing teams delegated project responsibilities to the appropriate staff. For example, Medical Records typically took ownership of auditing CNA documentation forms for completeness; MDS nurses, dietitians, and Social Services assumed responsibility for reviewing components of CNA documentation for accuracy. They also worked closely with the staff educator to establish followup plans for CNA in-service training when needed; staff were assigned to manage processes associated with support of the technology.

- **On-Time Report Use**

All the facilities with a high level of implementation used the Completeness Report to monitor CNA documentation completeness rates and to identify potential CNA documentation issues. Well-established processes to review the Completeness Report, including staff followup, were in place. All high-performing facilities integrated at least one clinical report into weekly care planning. The Nutrition and Priority Reports were used most often at existing interdisciplinary team (IDT) meetings, weight variance committee meetings, or MDS reviews. The Behavior Report was used occasionally at Behavior Management meetings. The DON, staff developer, dietary staff, QI staff, and MDS nurse were key users of reports in all facilities implementing On-Time. Typically, the Completeness, Nutrition, and Priority reports were the first three that the teams started to use. The facilities with a high level of implementation had additional report users, including unit managers, charge nurses, wound nurses, CNAs, and social services.

- **Workflow Redesign and New Process Initiatives**

Most high-performing facilities (66%) implemented the weekly 5-minute stand-up meetings with CNAs to review meal intake. The process varied by facility, e.g., used Nutrition or Priority Reports; however, all who implemented the process reported success in earlier identification of residents at risk. This success was attributed to improved communication with CNAs and licensed staff.

Three facilities (33% of high performers) implemented a structured end-of-shift format to focus CNA reports to nurses at the end of their shift. Nurses reported that they received better information from CNAs.

A total of 66 percent of high performers designated CNA team leaders to play a primary role in the project, e.g., serve in support role, lead meetings, follow up with CNA staff on incomplete or inaccurate charting.

Outcomes

The impact at the nursing homes implementing On-Time is summarized below in Table 6.

Table 6. Summary of Impact

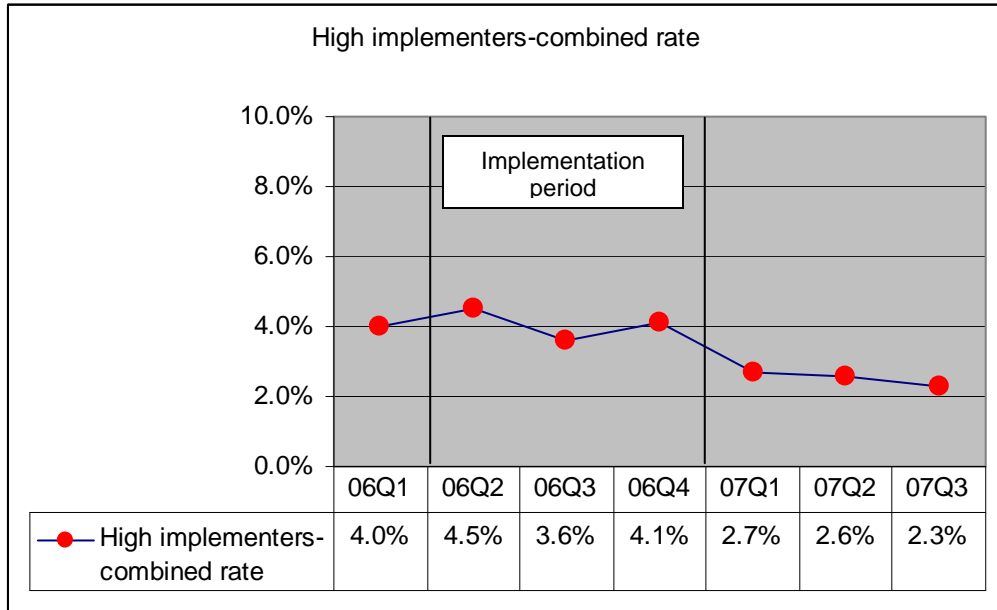
Area of Impact	Measure	Impact Summary (December 2007)
Clinical outcomes	Incidence of new in-house-acquired PrUs	Declined from 4% to 2.3% in the high implementers (n=8) (approximately 1.5 to 2 PrUs per 100 beds)
	CMS QM - % high-risk residents with PrU	Declined 12.4% (12.1% to 10.6%) in all On-Time facilities (n=17) Declined 30.5% (13.1% to 9.1%) in the high implementers (n=7, 2 facilities did not report data)
	CMS QM - % weight loss	Declined 7.8% (7.7% to 7.1%) in all On-Time facilities (n=17) Declined 37.0% (9.2 % to 5.8%) in the high implementers (n=9)
CNA documentation	Completeness of CNA daily documentation (specifically in meal intake, behavior observations, skin observations, Activities of Daily Living [ADL])	Improvements in CNA documentation completeness reported (DON, director of staff development [DSD], dietary staff, and MDS nurses)
	Accuracy of CNA documentation	Improvements in CNA documentation accuracy reported (dietary staff and MDS nurses)
Workflow efficiencies (based on feedback from 12 facilities)	Identification of residents at high risk	Improvements reported in identifying residents at risk and communication among team members (facility feedback)
	Communication of high-risk residents by dietary staff, wound nurses, MDS nurses, CNAs, Nursing	
	MDS nurse <u>and</u> dietary staff time spent gathering and validating data (MDS information, care plan meetings, family conferences)	Reduced time gathering information (dietary staff and MDS nurses)
CNA satisfaction	CNA satisfaction <ul style="list-style-type: none"> • Valued as member of team • Involved in interdisciplinary team discussions 	Improvements in CNA satisfaction reported (facility feedback)

DETAILED REVIEW OF DATA

Clinical Outcomes

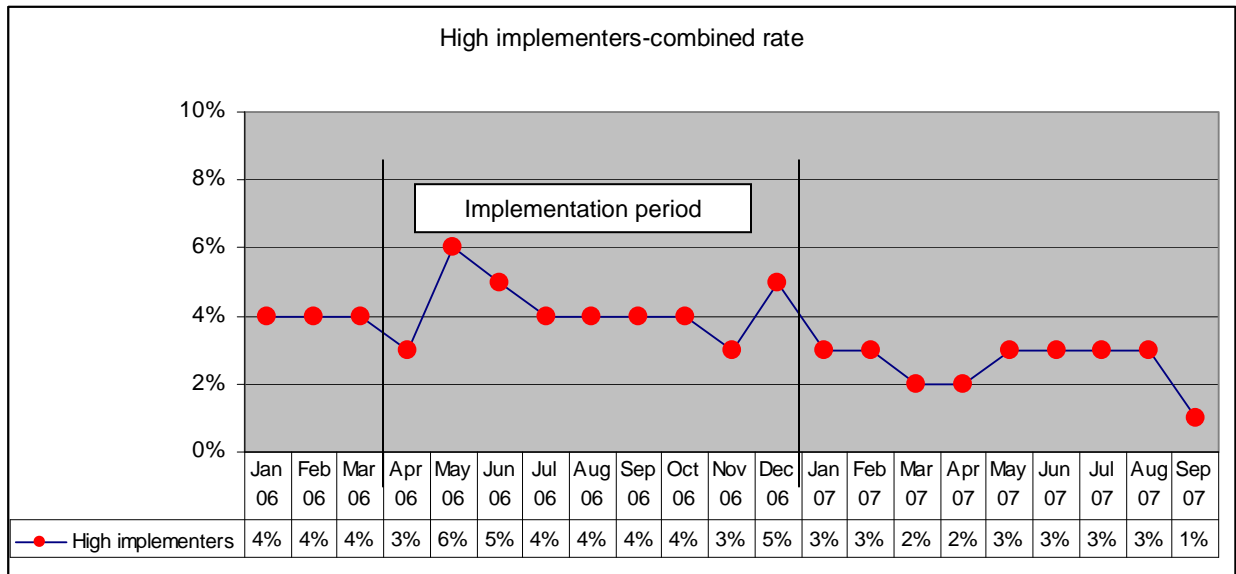
The in-house PrU rates for the facilities with a high level of implementation declined from a quarterly rate of 4 percent to 2.3 percent (approximately 1.5 to 2 PrUs per 100 beds).

**On-Time QI in Long-Term Care
Quarterly Pressure Ulcer Incidence Rates
(acquired in-house)
8 facilities (900 beds) - high level of implementation**

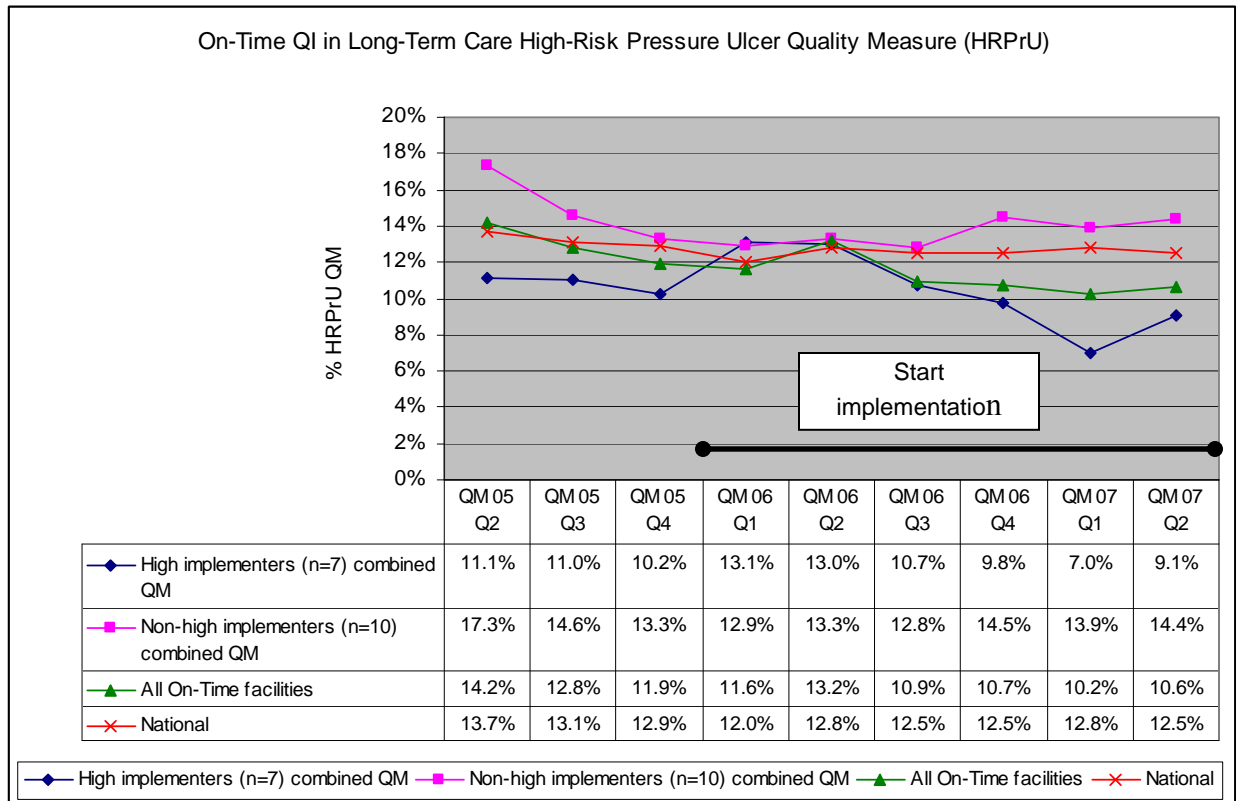


The monthly in-house PrU rates in September 2007 for the high implementers show a continued downward trend to 1% for all facilities combined.

**On-Time QI in Long-Term Care
Monthly Pressure Ulcer Incidence Rates
(acquired in-house)
8 facilities (900 beds) - high level of implementation**

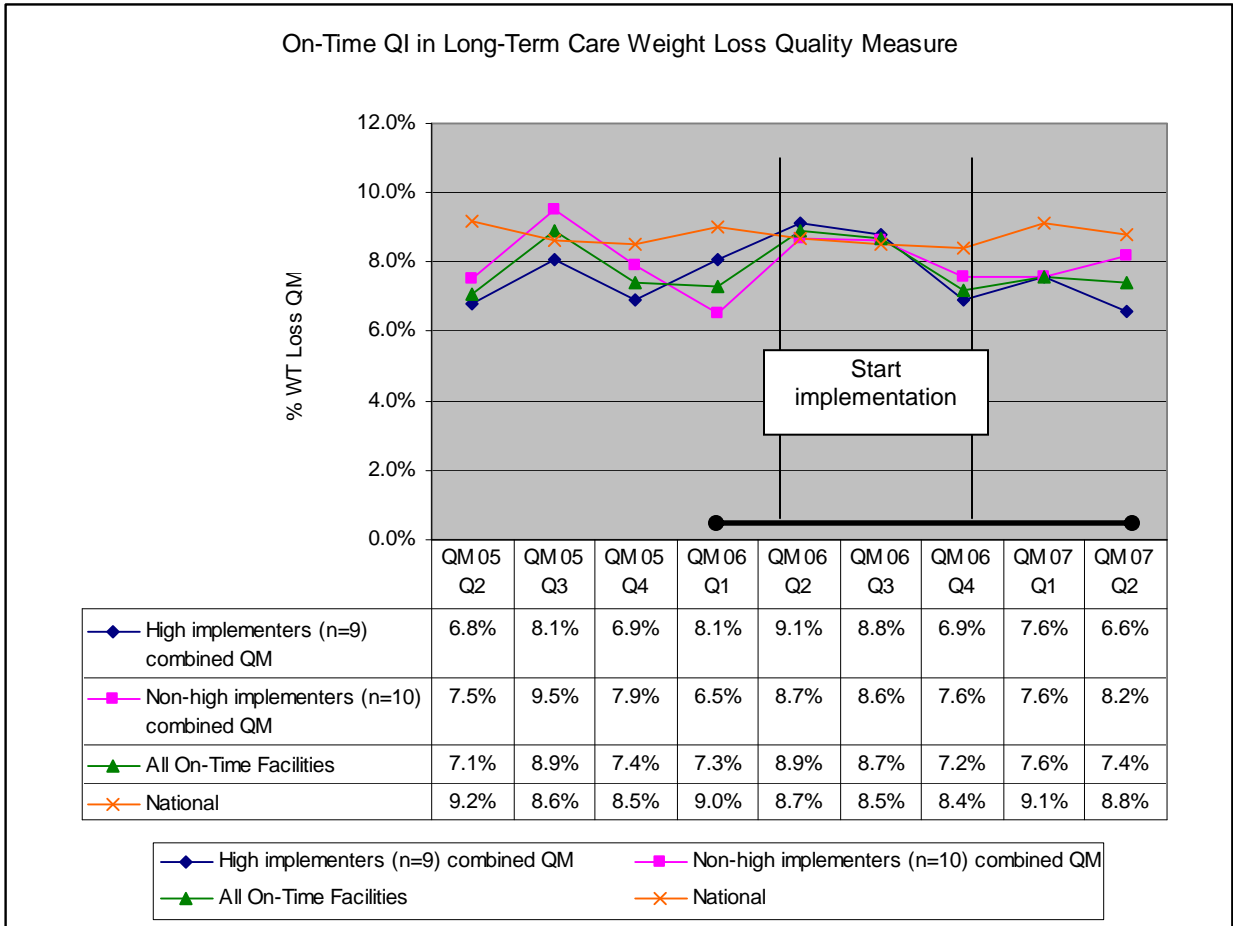


The high-risk PrU quality measure declined 8.6% (11.6% to 10.6%) between Q1 2006 and Q2 2007 for all On-Time facilities combined (calculated from 17 facilities with QM data implementing On-Time as of Q4 2006). For the facilities with a high level of implementation, high implementers, the high-risk PrU quality measure declined 30.5% (13.1% to 9.1%) between Q1 2006 and Q2 2007. In comparison, the national data increased 4.2%.



High implementers: - 30.5%
 Non-high implementers: +11.6%
 All On-Time facilities: -8.6%
 National: +4.2%

The weight loss quality measure increased slightly (7.3% to 7.4%) between Q1 2006 and Q2 2007 for all On-Time facilities combined (calculated from 19 facilities with QM data implementing On-Time as of Q4 2006). For the facilities with a high level of implementation, the weight loss quality measure declined 18.5% (8.1% to 6.6%) between Q1 2006 and Q2 2007. In comparison, the national data decreased 2.2%.



●————● Percent change in QM Q1 06 to Q2 07

High implementers: - 18.4%
 Non-high implementers: +26%
 All On-Time facilities: +2%
 National: - 2%

CNA documentation. Overall, facilities reported improvement in CNA documentation completeness and accuracy. Review of the data postimplementation showed that facilities maintained consistent CNA documentation completion rates greater than 75 percent for the sections of the form required for clinical reports: meal intake, bowel, bladder, and behavior documentation. Staff feedback from team conference calls was that CNAs have a better understanding of charting requirements now that Nursing is meeting with them weekly to review report (charting) results. In addition, CNAs can see the link between their daily documentation and information on the reports.

Workflow and staff satisfaction - feedback from facility project lead, MDS, and dietary team members. The areas of impact related to workflow and staff satisfaction are summarized based on facility team feedback:

- **Identifying high-risk residents:** Facility teams reported improvements in identifying high-risk residents in the following areas: residents with decreased meal intake, weight loss, behavior changes, increased urinary incontinence, and ADL decline.

- **Workflow efficiencies:** Facility teams reported that the greatest impact on workflow was in the following activities: QI monitoring, preparation for MDS assessments, medical record audits of CNA documentation, and preparation for State surveys.
- **Staff satisfaction:** Facility teams reported that the most improved staff satisfaction was with the CNA staff. Improved CNA staff satisfaction was associated with increased involvement in resident care discussions. Facilities with a high level of implementation reported improved satisfaction with other members of the team, such as MDS nurses and dietary staff.
- **Nurse to dietary staff communication:** Facility teams reported that the greatest impact on communication was improvement in communicating about residents with significant decreases in meal intake and significant weight loss. Dietitians have an earlier awareness of residents with declining meal intake or weight loss.
- **Staff nurse to wound nurse communication:** Facility teams reported that the greatest impact on staff nurse to wound nurse communication was improvement regarding residents with significant decreases in meal intake and significant weight loss.
- **CNA to nurse communication:** The greatest improvement in communication occurred regarding behavior changes, red areas on skin, new open areas, and ADL decline. Nurses reported that communication of resident needs to nurses by CNA staff has improved since the shift worksheet was implemented. CNA staff report feeling more confident that nurses are aware of care being provided during their shift.
- Also, facility leadership reported that they have taken a “giant leap” toward technology use and understanding HIT at the facility.

DISCUSSION: LESSONS LEARNED

Lessons learned are summarized in five sections: implementation process, organizational obstacles, training, HIT implementation and support, and partnering with QIOs.

Implementation Process

There were several lessons learned related to the On-Time implementation process:

- **Involvement of CNAs in the transition to the new documentation process supported success.** Successful teams started with a core group of CNAs or a lead CNA to communicate the standardization effort among CNA staff, attend meetings, discuss documentation changes with fellow CNAs, and elicit feedback. The CNAs participated in the training process. Facility teams used one of the following approaches as they transitioned to the new standardized form: started with a pilot unit to work through initial content or process issues or started with a CNA preceptor or CNA leads who documented a subset of residents.
- **CNA documentation required ongoing monitoring** and followup by staff to maintain accuracy and high documentation completion rates. Successful teams developed a structured process with clear accountability to monitor CNA documentation completion rates on a daily basis initially, then weekly, until high completion rates were sustained.

- ***Report use by front-line teams requires concrete strategy.*** Facility teams that were successful adopted one or more of these strategies:
 - Give specific assignments to staff members to use reports and provide feedback to the DNS.
 - Have reports reviewed and discussed by clinical team members (not just reviewed by one person).
 - Target meetings where report information is used to support care planning discussions, e.g., Behavior report for behavior management meetings, Nutrition report for weight variance meetings.
 - Start small. : Focus on one or two reports for team use and a subset of report data versus all available report information.
 - Use specific report results to trigger focused intervention, e.g., residents with red areas (Priority Report) require review by a skin nurse or wound team to confirm results.
 - Keep review of report information focused.: Do not slip into lengthy meetings that keep staff away from direct resident care, e.g., review residents with decline in meal intake and focus on nutritional interventions.
 - Identify how a report can eliminate manual work or make work easier for staff.
 - Provide ongoing training and follow up on reports: how to access, how to print, and when to use.

Use of clinical reports is a paradigm shift for nurses; nurses require continual monitoring and support to integrate reports into care planning processes. The use of reports was greater in facilities with leadership committed to strengthen the skills of the front-line clinicians in multidisciplinary collaboration around the care of residents. Also, leaders who understand the use of data and quality improvement teams are strong advocates for the use of reports by front-line staff in daily work.

- ***Nursing home chains require a more complex project management approach.*** Working with several facilities that were part of a chain, we identified the need to establish routine leadership progress reports and conference calls in addition to the routine implementation team conference calls. Given the more complex management structure within a chain, the leadership team does not overlap with the implementation team as it does in independently owned facilities. Expect greater lag time from plan to implementation due to the lengthy approval process required by large corporations.
- ***Routine progress tracking by facility leadership is required.*** To better engage all facility teams in monitoring implementation progress, the ISIS facilitators organized periodic feedback sessions via conference call. In addition, several facility teams provided summary points highlighting successes and challenges. The goal in future On-Time efforts will be to have each team provide quarterly feedback on progress via both conference call and written report.

Organizational Obstacles

Managerial challenges were considered in our implementation planning and were assessed during implementation at each facility. We refined strategies to address each issue.

- **Leadership hesitation to participate.** The biggest barrier to getting nursing homes to participate was leadership having the time needed to make the decision regarding participation and the HIT investment. Every nursing home provider we spoke with saw the value of the project, but having them decide to participate in the project within 1 or 2 months often was difficult.

It took time for people to understand this “new” approach to quality improvement and process redesign. Unless they hear it multiple times or can get confirmation from someone they already know and trust, many providers see the value of the project but are not able or willing to participate as an early adopter.

We grouped facilities into these general categories:

- Ready to participate and need little time to decide
- See value but unable to decide within project deadlines
- Skeptical of the intervention (unable to see the value in the process redesign and use of technology at their facilities; perceive this effort as “one more thing for staff and management to do”)

Key characteristics of nursing homes that decided to participate were the following:

- Need help lowering PrU rate
 - Very interested in taking first steps toward automation but cannot afford an electronic health record
 - Very interested in standardizing CNA documentation and streamlining process
 - Would like to improve CNA satisfaction
 - Recognize the need to improve systems of care related to using information at the front line for better clinical decisionmaking (e.g., shift report, interdisciplinary communication).
- **Resistance to change documentation or lack of buy-in**, e.g., challenges for team members moving from known paper documentation logbooks to unknown standardized documentation forms and automation, perception that documentation takes more time and is more complicated than previous processes. The perception that we worked to overcome was that this project is “one more thing for staff to do”; instead we promote the proven track record of the project and the fact that the effort will bring considerable value to staff and residents.
 - **Staff turnover.** Staff turnover is common in long-term care facilities. To address this challenge, training materials, plans, policies, and procedures for using standardized documentation forms were included in new staff orientation. CNA team leaders, if in place, were responsible for supporting new staff or agency staff in learning the process.
 - **Administrator and DON turnover.** Turnover at the management level is common in long-term care facilities. When a change in leadership occurs, it is important to allow time for the facility to adjust to the change. The impact depends on the extent that responsibility for process improvement is shared with key staff or the primary responsibility of the DON. The project team established a working relationship with at

least two people for site project coordination. In addition, a strong relationship between the project facilitator and the core team was established on facility-specific calls and onsite visits.

- ***Site-specific needs and customization requests for standardized documentation forms and reports.*** We encouraged all facilities to standardize their documentation forms. How to support variation in documentation data elements across sites is an ongoing challenge for HIT vendors.
- ***Resistance to adopt reports and redesign processes to use reports.*** Quality Improvement skills and knowledge varied in participating facilities. Understanding the role and function of QI resources within each facility was essential. Knowledge of each facility's QI process allowed the project team to incorporate change elements into a structure that was familiar and comfortable to that facility's team. Use and experience of multidisciplinary teams within facilities varied. Does a foundation for teamwork exist? Is a facility taking its first steps forming a team of CNAs, RNs, MDS RNs, dietary staff, etc.?

An implementation team established at each facility provided a forum for ongoing communications about barriers, adoption, and organizational pressures or unforeseen issues. This partnership approach with project team facilitators and project management provided an objective participant (ISIS) focused solely on supporting the facility in successful implementation and results. It is often helpful when addressing organizational and cultural issues to have an external facilitator review options and provide perspectives from other facilities. In addition, networking with other participating facilities provided valuable insights into successful approaches that have been discovered elsewhere.

- ***Resistance to delegate project responsibilities to implementation team members.*** Roles and responsibilities of all team members were defined for each participating facility. Since each facility had different resources and levels of expertise available, ISIS established needs with each facility and defined roles and responsibilities of project team members accordingly with input from the facility. Each implementation team reviewed team roles at standard intervals to make adjustments or refinements.
- ***Competing priorities that develop over time.*** The project management team was a constant during the project and a resource with grant funds dedicated to the project for each facility. Workplan reviews were conducted every month to confirm timelines and assess resource utilization and gaps. Each work step was detailed specifically so that the team could assess barriers, delays, and resource issues. We allocated ISIS and facility time based on detailed plans and reviewed and revised as needed.

Training

- ***The feedback loop to review completeness and accuracy of CNA documentation was an ongoing process for each facility.*** The DSD conducted regular in-service training and the lead CNA worked closely with peers to correct documentation issues. Also, agency and relief staff did not always complete documentation, resulting in incomplete forms and reports. All CNA staff needed close supervision early in the process; well-defined process steps with clear accountability helped keep the process running smoothly.
- ***The ability to more easily monitor CNA documentation surfaced issues with CNA understanding of daily documentation requirements that were not known previously.***

CNA documentation has required ongoing in-service training for CNA staff. Facilities spent more time than anticipated on CNA in-service training for appropriate documentation. While this may have been an issue with previous documentation forms, inaccurate or incorrect documentation patterns were not easily seen because of the manual process to review each form individually. The online Completeness Report summarized documentation errors for nursing leadership review and followup.

The Completeness Report provided nursing leadership with a mechanism to support CNA documentation audits. In the past, this manual process was very time consuming and not conducted consistently. Now, teams can conduct chart audits more frequently, recognize charting issues earlier, and establish a plan to follow up with CNA staff to correct the problem.

Five-minute stand-up meetings with CNA staff revealed areas where CNAs “misunderstood” appropriate documentation. For example, one facility reported that CNA staff were not correctly documenting meal intake. This was discovered during routine review of Nutrition Report results with nursing and CNA staff. Another facility discovered that CNAs were not clear about “incontinence” and what it meant as evidenced by documentation inconsistencies reported on the Completeness Report for bowel and bladder documentation.

- ***Facilities were at varying levels of understanding of how to use information to improve care planning processes for quality improvement versus “find bad apples” or quality assurance (QA).*** The ISIS team collaborated with QIOs to assess level of understanding within the nursing home leadership team of QI versus QA. This is an area that required further discussion in planning for next phases.

Technology Implementation and Support

- ***IT knowledge deficit of nursing home facility teams.*** Most of the facility teams had little to no IT knowledge before the project started. A few team members were PC literate; most had to be trained. Facilities without a “go-to” person to answer technology questions or to support the digital pen processes had more difficulties sustaining project activities than facilities with access to immediate IT support.

Implementing new technology in nursing homes, no matter how simple to use, requires dedicated resources to support the new forms and processes. It is difficult to integrate IT into an environment with little to no onsite technical support.

- ***Dedicated staff time needed on an ongoing basis for HIT implementation in nursing homes.*** For example, digital pen processes, while “low-tech,” required daily monitoring by facility staff and assignments for ongoing operation (ensure that pens were working properly and data were uploaded). HIT maintenance and monitoring, even for a low-cost solution such as the Digital Pen Systems technology, are an ongoing responsibility at the facility. Since this was a new technology used in nursing home settings, the following expectations were learned over time by the teams:
 - Staff Development, Medical Records, and often CNA leads or charge nurses need to be responsible for ensuring that data are uploaded.

- Medical Records needs to be responsible for managing online census updates.
 - Staff Development needs to be responsible for fielding technology process questions from staff on an ongoing basis and training new staff on how to use new technology.
 - The administrator needs to be responsible for troubleshooting technology issues for staff and communicating with the HIT vendor.
- ***Initial lack of confidence in report data.*** All facility teams sometimes questioned the report data. The feedback loop to review completeness and accuracy of CNA documentation was an ongoing process for each facility. Building team confidence in the accuracy of the data entered and the HIT system's ability to capture the data is a critical step before using reports. If clinicians cannot obtain accurate clinical reports consistently, it is difficult to regain team confidence in electronically generated reports.
 - ***Lack of timely support from vendor.*** There was a need to establish a routine process to monitor data uploads for facilities using the Digital Pen Systems technology solution. The ISIS facilitators worked with Digital Pen Systems to develop an ongoing process and report to monitor pen uploads and completeness of data transfer.
 - ***Large effort needed for ongoing customization.*** Standardized CNA documentation forms contain approximately 90 to 95 percent common data elements across facilities. However, there were both State and facility needs that required approximately 5 to 10 percent customization of data elements for each facility. IT programming staff originally estimated and budgeted for three versions of CNA forms to meet the needs of all facilities. Because each facility form required some level of customization, form development and testing effort by the vendor teams was greatly increased.
 - ***HIT project versus process improvement initiative.*** Facilities that encountered ongoing challenges with HIT implementation often lacked full-time HIT support at the facility, resulting in a focus on the technology versus process improvement initiatives.

Partnering With QIOs

- ***QIO teams were valuable and supportive partners in recruiting.*** QIO team members became well versed in providing a project overview and discussing the business case for the project.
- ***QIO team members could not devote large amounts of time to direct involvement in the implementation process.*** Due to resource cuts and limitations of the 8th Scope of Work, QIO team members were limited in their time. We worked with the teams to identify critical milestones in the implementation process for them to participate and supplemented this experience with ongoing calls with the ISIS team.
- ***It was a natural fit for the QIO team to work with multiple facility teams to sustain how they use reports in daily activities.*** To date, we have had several discussions with QIO team members about questions, such as, How could the QIO adopt Real-Time in the future and what would be the QIO role? Discussions related to report use could happen across many facilities versus a focus on specific issues at one facility. We worked with participating QIOs to build a strategy for sustaining quality improvement in PrU prevention and discussed strategies and plans for each QIO to move the project forward in additional facilities in their State.

CONCLUSION

The On-Time program is based on a unique integration of research evidence and quality improvement principles with direct input from actual users, whose feedback and suggestions are incorporated to refine not only the clinical and HIT tools, but also the approach to care. The On-Time process was not designed to be a magic bullet solution to the problem of PrUs. Rather, it is a flexible strategy that can be adjusted to each facility's particular context, carefully restructuring workflow processes and communication patterns to ensure a more attentive care procedure overall and prompt action on behalf of high risk residents.

On a broad scale, the On-Time project has improved clinical outcomes (PrU rates), increased CNA satisfaction, helped improve communication about high-risk residents, and fostered collaboration across facilities. These nursing homes across the country have formed a network dedicated to solving common challenges and a community of innovators in long-term care quality improvement. Additional information about On-Time can be found on the AHRQ Web site (<http://www.ahrq.gov/research/ontime.htm>).

Factors that led to successful implementation were:

- A designated project lead committed to making On-Time implementation a priority, interested in building the skills of front-line staff (including CNAs), and willing to delegate responsibilities to multidisciplinary team members.
- Multidisciplinary team participation in On-Time activities.
- Various team members using the On-Time reports.
- Process redesign to integrate On-Time reports into existing meetings and implement new processes such as 5-minute stand-up meetings with dietary staff and CNAs.

Factors that led to a low level of implementation were:

- Lack of leadership or team time to implement On-Time.
- Noncompliance with project activities, such as: facility team conference calls and process redesign activities.

These factors for success and lack thereof will be incorporated into future implementation planning.

IMPLICATIONS FOR THE FUTURE

Several insights were gained from these efforts and will be used to answer the following questions as we design future implementations:

- What is the best way to partner effectively with nursing home organizations with multiple facilities?
An On-Time implementation strategy involves both top leadership and front-line clinical teams throughout the entire implementation time period. This will be a factor specifically in nursing home organizations with multiple facilities. While the initial focus of implementation is with front-line teams, ongoing discussions will involve top leadership

and identify how they can support the front-line processes. For example, as QI initiatives or new processes are rolled out, it is important that the work of the front-line teams be taken into account. Also, as clinical consultants such as dietary staff work with front-line teams, if they fully understand the reports available from the project, they will be able to integrate the reports into their work as well.

- How can we strengthen training for the entire multidisciplinary team in use of decisionmaking reports to identify residents at risk and coordinate care with the multidisciplinary team? For example, one barrier often encountered was that MDS nurses preferred using paper forms to review documentation instead of reports. They wanted to see actual documentation – the entire form. Another was that in general nurses resisted reviewing weekly On-Time reports.
- How do we expand into other clinical areas the initial success of the On-Time approach to reduce PrUs? Several facilities have started using the On-Time approach in an effort to improve wound assessment documentation and PrU treatment. Other clinical areas that are being considered include fall management and incontinence.

LIST OF PUBLICATIONS AND PRODUCTS

A. Talks/Papers/Dissemination Activities

- **Lumetra Nursing Home Advisory Meeting, June 4, 2007.** Siobhan Sharkey joined Kate O'Malley in presenting an update on the project and discussing dissemination strategies with the Lumetra Nursing Home Advisory Group.
- **AHIMA LTC IT Summit, June 20, 2007.** Siobhan Sharkey presented a storyboard on the On-Time project progress and facility case studies.
- **CA provider teleconferences, July 17 and 18, 2007.** The ISIS team collaborated with Lumetra and CHCF to facilitate two teleconferences for California facilities interested in learning more about the On-Time project.
- **California Webcast, June 12, 2007, and New York State Webcast, August 8, 2007.** Both Webcasts had hundreds of facilities and their staff participating. Participants asked numerous questions and answers were presented on the Webcasts and have been posted to the AHRQ Web site. We have been following up with facilities that have indicated that they are interested in learning more about the On-Time approach. See : <http://www.ahrq.gov/research/ontime.htm>.
- **Conference calls with numerous nursing home HIT vendors.** ISIS facilitators have discussed the project requirements with several HIT vendors in preparation for proposals submitted to the New York State Health Department by New York nursing homes to participate in the On-Time PrU prevention project.

B. Discussions With Public and Private Entities

- **Initiate Dissemination for the States of California and New York.** During this project we discussed with the New York State Health Department and with CHCF, Lumetra, and others in California how to disseminate the On-Time lessons to all nursing homes in these two States.