Survey of VHA Clinical Reminder Use

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- Emily Patterson—PI
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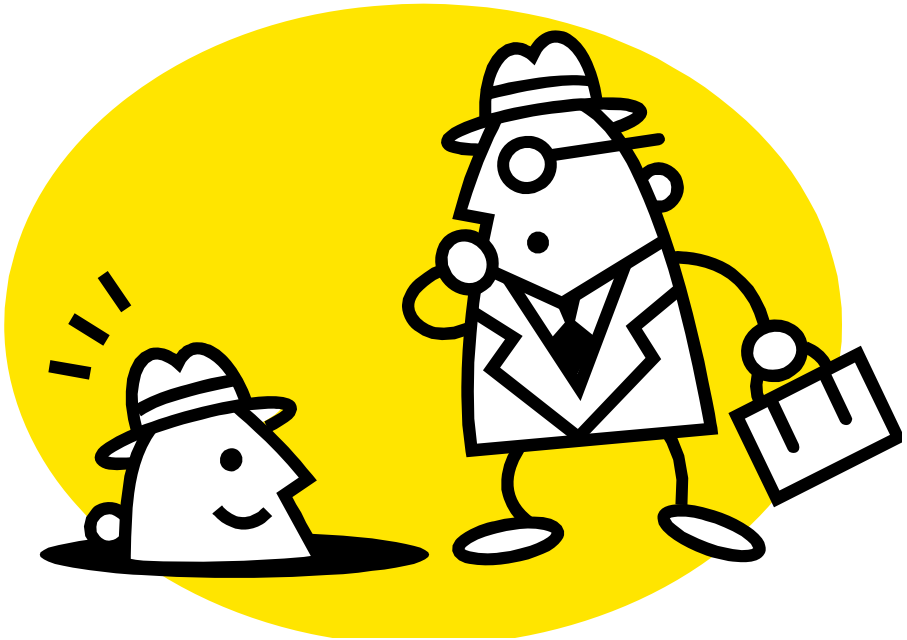
Goals for Our Time Together

- To describe results of a national survey
- To discuss experience with method integration



Background

- Computerized clinical reminders
  - Core VHA tool (~100% penetration)
  - Users: Primary care providers, intake nurses
  - Automated reminders of tasks during visit
  - ‘Cheap’ alternative to External Peer Review Program (EPRP) performance measures
- No representative national physician survey

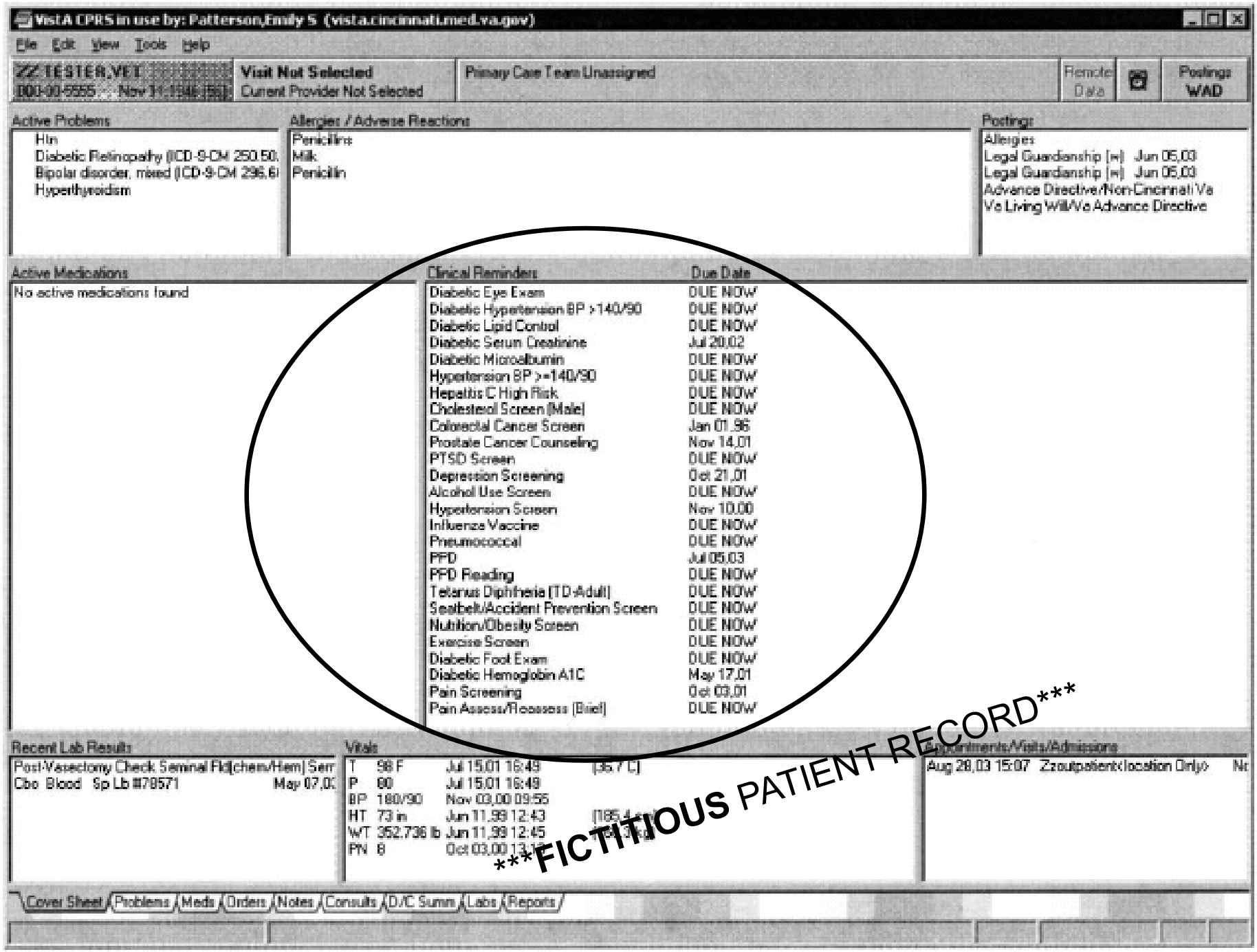


Figure 1. CPRS coversheet in which "due" clinical reminders are displayed for a fictional patient.

Patterson ES, Nguyen AD, Halloran JP, Asch SM: **Human factors barriers to the effective use of ten HIV clinical reminders**. *Journal of the American Medical Informatics Association* 2004, **11**(1):50.

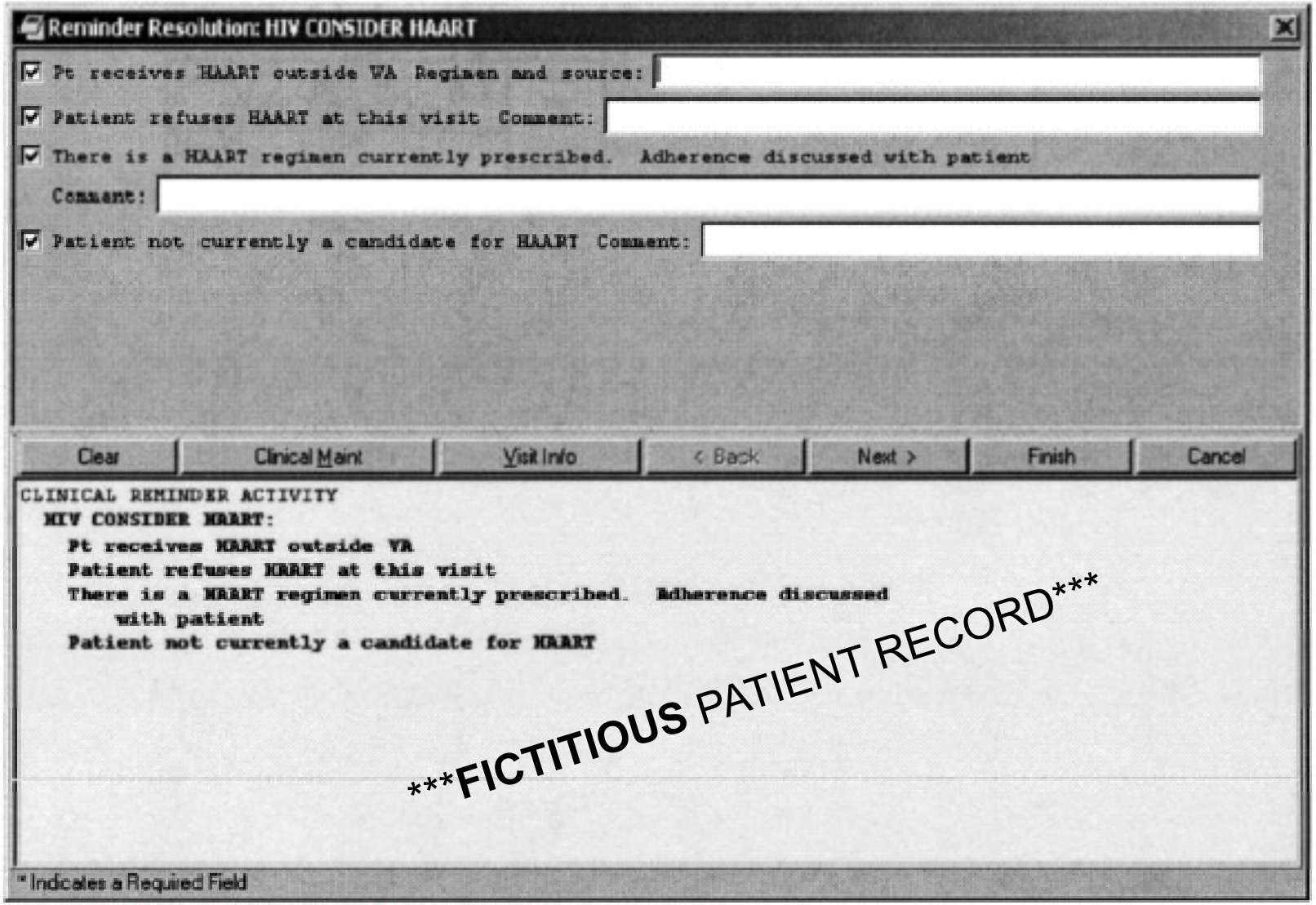


Figure 2. Dialog box used to document inapplicability of reminder to consider HAART.

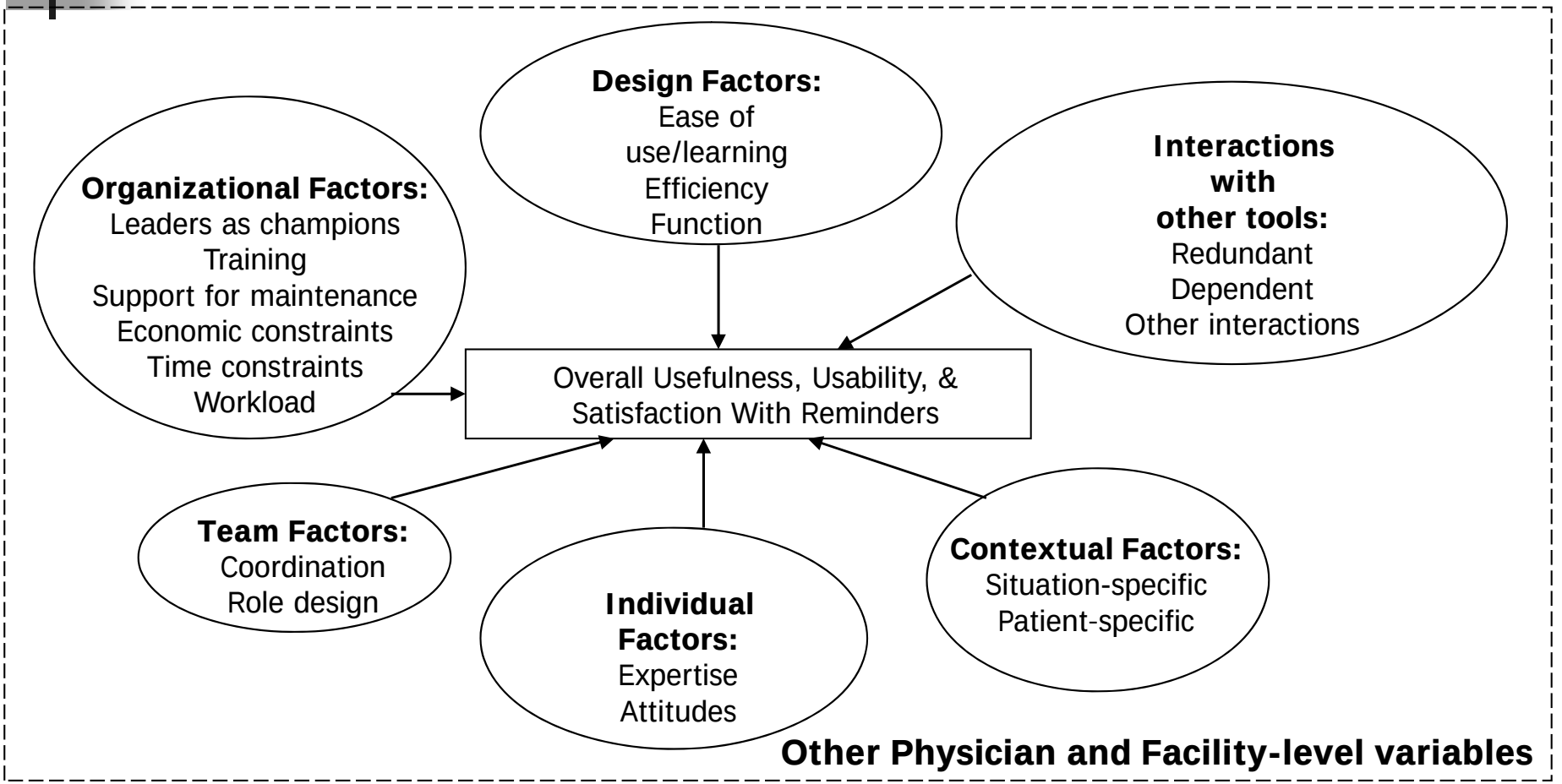
Patterson ES, Nguyen AD, Halloran JP, Asch SM: **Human factors barriers to the effective use of ten HIV clinical reminders**. *Journal of the American Medical Informatics Association* 2004, **11**(1):50.

Survey Questions

1. What are VHA primary care physicians' perceptions of clinical reminders?

2. What are physician and facility-level predictors of a more favorable global assessment of reminders?

Conceptual Framework



Adapted from Patterson ES, Nguyen AD, Halloran JP, Asch SM: Human factors barriers to the effective use of ten HIV clinical reminders. *Journal of the American Medical Informatics Association* 2004, 11(1):50.

Methods

- Cross-sectional national survey
- March 2005 through October 2005
- Sampling frame: “Personnel and Accounting Integrated Data” database
- Stratified random sample
  - 4 sites over-sampled: GLA, Cincinnati, Indianapolis, and Minneapolis
  - Other sites: random sampling fraction, 15%

Methods

- Data collection: 3 waves
  - Web (n=403, 71% of respondents)
  - Paper (n=98, 17% of respondents)
  - Telephone (n=69, 12% of respondents)
- Eligibility: primary care specialty (MD), $\geq$ half-day clinic, have used reminder
- Weighted response rate=69%
  - Four sites 66%; other VHA sites 69%

Scales constructed from survey

- Design/interface
- Integration with workload/workflow
- Clinical/situational specificity
- Self-efficacy
- Perceived role
- Sources of training
- VA management of reminders
- Global assessment

Physician-Level Categorical Variables	**Weighted Frequency (%) N=461**
1) Length of VHA service	
• <5 years	47%
• 5 to 9 years	23%
• 10 to 14 years	11%
• >15 years	18%
• Missing	0%
2) Specialty	
• Internal medicine	82%
• Geriatrics	7%
• Family practice	11%
3) Male	59%
• Missing	0%
4) Has academic appointment	55%
• Missing	3%

Physician-Level Categorical Variables	**Weighted Frequency (%) N=461**
5) Self-reported use of reminders	
• Always use reminders	73%
• Sometimes	18%
• Occasionally or rarely	9%
• Never	5%
Physician-Level Continuous Variables	**Median (IQR)**
6) Number of half-days of direct patient care	9 (5-10)
• Missing	0.43%
7) Years since medical school graduation	19 (11-27)
• Missing	0.21%

Facility-Level Categorical Variables	**Frequency (%) N=197**
7) Academic affiliation	
• Yes	61%
• Missing	21%
8) Located in metropolitan area	81%
• Missing	0%
9) Facilities with 3 or fewer physicians represented in sample	87%
Facility-Level Continuous Variables	**Median (IQR)**
10) Number of primary care visits (FY'04)	148,000 (65,000 - 296,000)
• Missing	1.02%

Global assessment ratings are only in the mid-range

Variable Name	n	Mean	SD	Median	IQR
Global assessment	***458***	***11.5***	***4.5***	***12.0***	***8.0–14.0***
Overall satisfied with reminders	460	3.9	1.8	4.0	2.0–5.0
Overall reminders are effective	460	4.3	1.7	4.0	3.0–6.0
Overall reminders are not more useful in principle than they are in practice	460	3.2	1.8	3.0	2.0–5.0

- Item response ranges from 1 to 7, where 1=”strongly disagree” and 7=”strongly agree”
- Scale response range 0-21

Integration with workload/workflow only in mid-range

Variable Name	n	Mean	SD	Median	IQR
Integration with workload/work flow	***460***	***9.5***	***4.2***	***10.0***	***6.0–12.0***
Enough time to complete reminders under typical clinical workload	460	3.0	1.8	3.0	1.0–4.0
Reminders do not unnecessarily duplicate information in my progress notes	461	3.1	1.9	3.0	2.0–5.0
Total number of reminders is not too large	460	3.4	1.8	3.0	2.0–5.0

- Each item response ranges from 1 to 7, where 1=”strongly disagree” and 7=”strongly agree”
- Scale response range 0-21

Poor clinical/situational specificity

Variable Name	n	Mean	SD	Median	IQR
Clinical/situational specificity	***452***	***11.3***	***4.4***	***11.0***	***8.0–14.0***
● Reminder dialog boxes provide appropriate options for MD to resolve reminder	457	3.3	1.6	3.0	2.0–4.0
● Most reminders apply to MD's patients	460	3.5	1.7	3.0	2.0–5.0
● Adding "Not Applicable" would not improve use and effectiveness of reminders	458	2.0	1.4	1.5	1.0–3.0
● Adding "Pending" would not improve use and effectiveness of reminders	455	2.5	1.7	2.0	1.0–4.0

- Each item response ranges from 1 to 7, where 1="strongly disagree" and 7="strongly agree"
- Scale response range 0-28

Pretty good self-efficacy; confident about computer skills

Variable Name	n	Mean	SD	Median	IQR
Self-efficacy	***446***	***45.1***	***8.4***	***45.0***	***39.0–51.0***
Reminders help MD provide care	459	4.7	1.8	5.0	4.0–6.0
Feels comfortable using reminders	457	5.3	1.5	6.0	4.0–7.0
Reminders make MD more productive	459	4.1	2.0	4.0	2.0–6.0
Recovers quickly when makes mistake using reminders	455	4.4	1.8	4.0	3.0–6.0
Enough workstations are available	461	5.8	1.5	6.0	5.0–7.0
Computer speed sufficient to use reminders	460	4.1	2.0	4.0	2.0–6.0
Has proficient computer skills to use reminders	460	6.0	1.5	7.0	6.0–7.0
Prefers to use computer while with patient	461	5.2	1.9	6.0	4.0–7.0
Makes no notes on paper to use later to complete reminders	460	5.5	1.8	6.0	4.0–7.0

- Each item response ranges from 1 to 7, where 1=”strongly disagree” and 7=”strongly agree”
- Scale response range 0-63

PCPs know who does the reminders—they do

Variable Name	n	Mean	SD	Median	IQR
Perceived role in reminder use	***459***	***9.7***	***3.3***	***10.0***	***8.0–12.0***
● Knows exactly which reminders responsible for completing	461	4.9	1.9	6.0	4.0–6.0
● Views reminders as part of core work activity	459	4.8	1.8	5.0	4.0–6.0

- Each item response ranges from 1 to 7, where 1=”strongly disagree” and 7=”strongly agree”
- Scale response range 0-14

Many sources of training that are helpful

Variable Name	n	Mean	SD	Median	IQR
Sources of training help MD learn reminders	***451***	***16.3***	***5.6***	***16.0***	***12.0–20.0***
Training sessions	457	4.2	1.9	4.0	2.0–6.0
Online documentation	453	3.7	1.8	4.0	2.0–5.0
Performance feedback	456	4.2	1.8	4.0	3.0–6.0
Other clinical staff	457	4.2	1.8	4.0	3.0–6.0

- Each item response ranges from 1 to 7, where 1=strongly disagree and 7=strongly agree
- Scale response range 0-28

VHA plays active role in increasing reminder use

Variable Name	n	Mean	SD	Median	IQR
Management role	***460***	***4.6***	***1.8***	***5.0***	***4.0–6.0***
• VHA managing of reminders increases my completion of reminders	460	4.6	1.8	5.0	4.0–6.0

* Each item response ranges from 1 to 7, where 1=strongly disagree and 7=strongly agree

Design/interface slightly above mid-range

Variable Name	n	Mean	SD	Median	IQR
Design/interface	***448***	***25.1***	***7.2***	***25.0***	***20.0–30.0***
• Easy to use most reminders	459	3.9	1.9	4.0	2.0–5.0
• Easy to learn how to use reminders	461	5.1	1.6	5.0	4.0–6.0
• Expected functions and capabilities are available	459	3.5	1.8	3.0	2.0–5.0
• Formats easy to use	458	4.4	1.6	4.0	3.0–6.0
• Not surprised by actions of some reminders	452	4.1	1.5	4.0	3.0–5.0
• Information on reminder screen is presented pleasantly	457	4.1	1.4	4.0	3.0–5.0

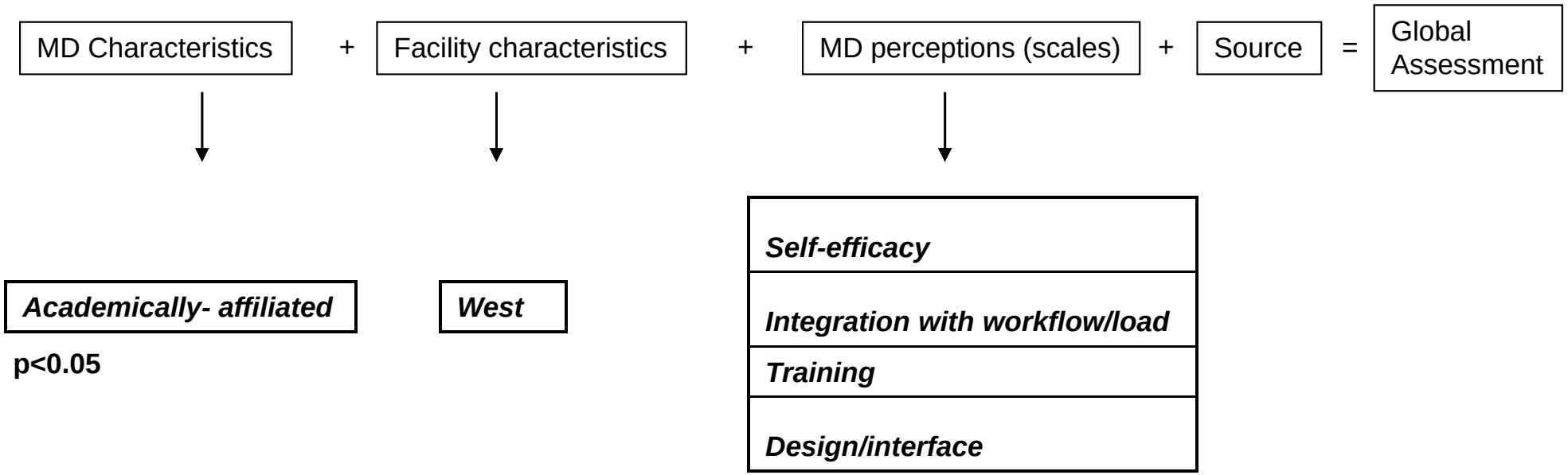
- Each item response ranges from 1 to 7, where 1=strongly disagree and 7=strongly agree
- Scale response range 0-42

Study Question 1: What are PCPs' perceptions of reminders?

- Global assessment ratings are only in the mid-range
- Integration with workload/workflow only in mid-range
- Poor clinical/situational specificity
- Pretty good self-efficacy; confident about computer skills
- PCPs know who does the reminders—they do
- Sources of training are helpful
- VHA plays active role in increasing reminder use
- Design/interface slightly above mid-range

Study Question 2: What are physician and facility-level predictors of a more favorable global assessment of reminders?

- overall satisfaction, perceived effectiveness, and perceived usefulness



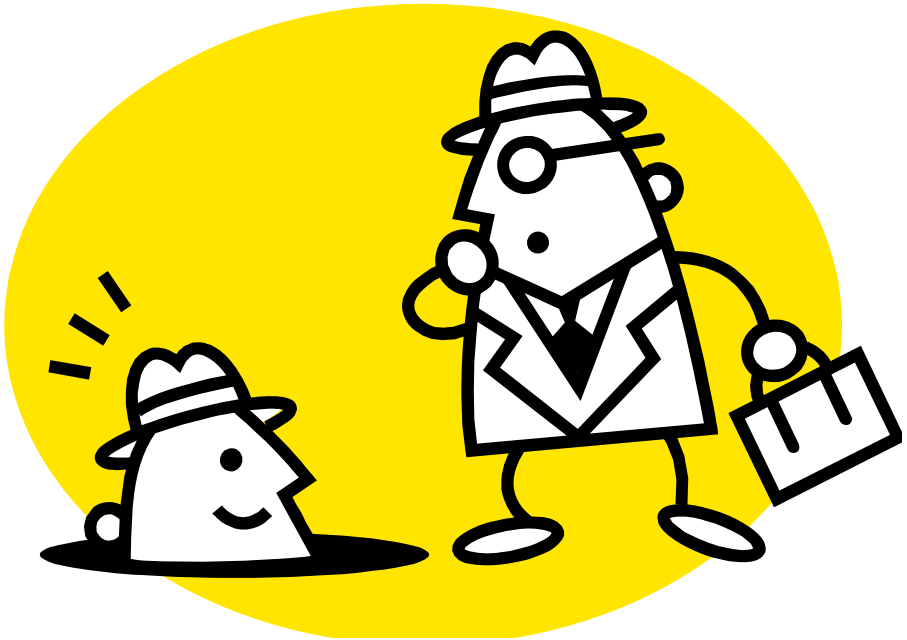
p<0.05

Survey Limitations

- Facility/clinic-level variation (but model accounted for clustering)
- Assessed overall reminder process
- Clinical complexity of each PCP's practice
- Staff physicians; no nurses, NPs, PAs, or residents
- Informatics infrastructure, performance measures, culture, incentive structure→limited generalizability beyond VHA

Goals for Our Time Together

- To describe results of a national survey
- To discuss experience with method integration



Survey Reviewer Comments

- “Use of an unvalidated self-report measure”
- “A qualitative study on this topic might provide deeper understanding of the underlying phenomena”
- “No data on actual use of CCRs were used in the analysis; only limited data on self-reported use was included”
- “It is unclear...how these findings can be applied to improve the use of reminders”
- “Were there any qualitative data collected to elicit suggestions for how the system could be improved?”

‘Qualitative’ Method Myths

- Identical methods can be used at multiple sites
- Findings from a few sites generalizes across VHA
- Can get reliable frequency data on system use
- Findings directly inform how to improve design
- Can predict how much a design change or intervention will impact performance
- Analyses can include both micro & macro levels
- Studying a site where a system is in use can predict all implementation hurdles at another site

Integration Lessons Learned

- Timing not a barrier in survey design
- Issues of sub-populations not worth ‘real estate’ (But...we had no open-ended responses)
- Physicians only (and no residents) in order to have nationally representative sample
- Over-sampling 4 observational sites had low yield
- Self-report not appropriate for perception (and maybe undesirable behavior), but reasonable for adoption/usefulness/usability/satisfaction/workflow
- Too difficult to ask about desirability of detailed design changes or other interventions

Triangulated Findings: Barriers

Barrier to CR Use	Survey: National VHA (Physicians)	Observations: 8 HIV sites (Physicians)	Observations: 4 Outpatient Sites (Mixed)	Survey: Camp CPRS (Mixed)	Lab Study: Current vs. Redesign (RNs)
Workload	Yes	Yes	Yes	Yes	N/A
Integration with workflow	Yes	Yes	Yes	N/A	N/A
Ease of use	Somewhat	Yes	Yes	Somewhat	Yes
Learnability/ Training	Somewhat	Yes	Somewhat	Yes	Yes
Clinical/ situational specificity	Yes	Somewhat	Somewhat	Somewhat	N/A
PCP-Patient Relationship	N/A	Somewhat	Somewhat	N/A	N/A
Unclear responsibility	No	No	Yes	N/A	N/A
Adoption	No	No	No	Reminder-dependent	N/A

References

- Fung CH, Tsai JS, Lulejian A, Glassman P, Patterson ES, Doebbeling BN, Asch SM. Computerised Clinical Reminders Use In an Integrated Healthcare System. *The Journal on Information Technology in Healthcare;* 2009;7(3):144-159.

- Fung CH, Tsai JS, Lulejian A, Glassman P, Patterson ES, Doebbeling BN, Asch SM. (2008). An Evaluation of the Veterans Health Administration's Clinical Reminders System: A National Survey of Generalists. *Journal of General Internal Medicine, Health Information Technology supplement, 23(4):* 392-398.

Questions?