

Project Title: Nursing Home Information Technology (IT): Optimal Medication and Care Delivery

Principal Investigator: Horn, Susan, Ph.D.

Organization: International Severity Info Systems, Inc.

Mechanism: RFA: HS04-011: Transforming Health Care Quality through Information Technology (THQIT)

Grant Number: UC1 HS 015350

Project Period: 09/04 – 09/08, Including No-Cost Extension

AHRQ Funding Amount: \$1,486,452

Summary Status as of: September 2008, Conclusion of Grant

Strategic Goal: Develop and disseminate health IT evidence and evidence-based tools to improve health care decisionmaking through the use of integrated data and knowledge management.

Business Goal: Synthesis and Dissemination

Summary: The objective of this grant was to implement a health information technology (IT) system with added best practices decision support modules in 15 participating nursing homes (NHs) and evaluate impact on care processes; resident health outcomes, including pressure ulcers (PrUs); and staff efficiency and satisfaction. Fourteen of the 15 NHs were not-for-profit and facility size averaged 100 beds, ranging from 50 to 250 beds. Project work spanned 3 years: 1 year for planning, 1 year for initial implementation, and 1 year for continued implementation and sustainability strategies. Facilities implemented health IT incrementally, focusing implementation in one or more areas: 1) certified nursing assistant (CNA) daily documentation; 2) registered nurse (RN)/clinical team care delivery and planning activities; and 3) medication administration. Starting 6 months after implementation, and each 6-month period thereafter, the project team re-measured areas assessed at baseline in order to evaluate change over time using data from Centers for Medicare and Medicaid Services' (CMS) Nursing Home Compare and staff feedback on workflow.

All 15 NHs implemented health IT for CNA documentation and clinical reports to summarize CNA information into meaningful trends (e.g., weight loss, meal intake, and other indicators) for high risk of PrU development. All 15 nursing homes implemented health IT for various components of nursing documentation. Also, five facilities implemented health IT for electronic medication administration record/electronic treatment authorization record, but because of vendor delays the implementation did not occur fully until the last year of the project.

Facilities experienced positive impact on workflow and staff morale including improved documentation completeness, reduced time gathering and compiling information, improved access to information and multi-disciplinary communications, and staff satisfaction with technology versus paper processes. There were overall decreases of 18 percent in the CMS high-risk PrU and weight loss quality measures in 18 months.

Specific Aims

- Implement a health IT solution in NHs that will improve clinical practices and health outcomes through electronic CNA documentation; clinical decision support focused on incontinence care, nutrition management, skin assessment, behavior management, and restorative care best practices; and electronic medication documentation and administration. **(Achieved)**
- Identify health IT implementation best practices in use of technology in NHs through: collaborative, multi-disciplinary partnerships of NH provider leadership and implementation teams, evaluation team, and health IT vendor; workflow analysis and clinical process redesign

efforts throughout each stage of implementation; and ongoing assessment of implementation processes and refinement based on results. **(Achieved)**

- Conduct comprehensive evaluation of the role of health IT in changing clinical practices and improving resident safety, quality of care, and health outcomes, focusing on: clinical practices, including documentation and care planning; clinical outcomes, including fewer PrUs and less weight loss; provider satisfaction; and efficiency of care delivery. **(Achieved)**

2008 Activities: 2008 activities included analysis and dissemination.

Impact and Findings: Each facility team monitored outcomes and processes pre-and post-implementation as part of the effort to identify promoters and/or challenges to implementation of health IT and assess the impact. The project team assessed impact in four major areas:

- **Workflow:** How does health IT implementation impact daily workflow for providers?
- **Provider Adoption and Attitudes:** How does health IT implementation impact staff satisfaction?
- **Health Outcomes:** How are changes in clinical practice using health IT associated with improved health outcomes for NH residents?
- **Lessons Learned:** How can lessons learned from the project impact future implementation efforts and dissemination of health IT into nursing homes?

CNA Staff Feedback: Over 325 CNAs provided feedback indicating improvement from baseline (pre-health IT) compared to 18 months post-implementation in the following areas: spending the right amount of time documenting resident information, receiving enough information about the resident at the beginning of the shift to provide quality resident care, understanding what needs to be done for the residents before starting work, and not having to document 2 days worth of documentation at the same time because of not having time to do it the previous day.

Nursing Feedback: Over 125 nurses provided feedback indicating improvement from baseline to 12 months post-implementation in the following areas: able to review CNA documentation for completeness before the end of the shift, CNAs understand care to be provided to the residents at the beginning of their shift, spending the right amount of time on shift report to communicate resident needs, aware of all residents on their unit who have PrU(s) or significant weight loss or decreased meal intake and transmit these to CNAs, and taking minimal effort to assemble resident summaries for the Minimum Data Set (MDS) nurse.

Minimum Data Set for Nursing Home Residents Feedback: Based on feedback from 26 MDS coordinators, the following areas of impact were found: time to gather MDS information decreased approximately 24 minutes for an admission assessment, 28 minutes for a significant change assessment, 10 minutes for an annual assessment, and 8 minutes for a quarterly assessment. Facilities reported that this was especially true for Section G of the MDS (activities of daily living [ADLs]). MDS coordinators reported improved completeness and accuracy in several areas: behaviors, bathing, urinary continence, ADLs—toileting, and ADLs—eating.

Dietary Feedback: Based on feedback from 19 dietary staff, the following questions showed improvement: change from zero percent daily or weekly weight change calculations per resident by dietary staff to 40 percent, dietary staff participation in care planning meetings, nurses notifying dietary staff when a resident has significant decreased meal intake, and finding information about resident behaviors.

Clinical Outcomes: The pre- and 18-months post-health IT implementation data for the CMS quality measure (QM) for high risk residents with PrUs decreased overall from 10.8 to 8.9, a decline of 18 percent. The CMS QM for unintended weight loss decreased overall from 9.2 to 7.5, a decline of 18.5 percent.

Selected Outputs

Horn S. On-Time Quality Improvement for Long-Term Care: Using Nursing Home IT for Optimal Care Delivery ([PowerPoint File](#); [Web Version](#)). AHRQ 2008 Annual Conference presentation: September 2008, Bethesda, MD.

Bergstrom N, Smout R, Horn S, et al. Stage 2 pressure ulcer healing in nursing homes. J Am Geriatr Soc 2008 Jul;56(7):1252-8.

Horn SD, Gassaway J. Practice-based evidence study design for comparative effectiveness research. Med Care 2007 Oct;45(10 Supl 2):S50-7.

Grantee's Most Recent Self-Reported Quarterly Status: The project had concluded.

Milestones: Progress is completely on track.

Budget: On target.