Published in final edited form as:

J Wound Ostomy Continence Nurs. 2015 ; 42(3): 235–241. doi:10.1097/WON.0000000000000136.

Analysis of Qualitative Interviews about the Impact of Information Technology on Pressure Ulcer Prevention Programs: Implications for the Wound Ostomy Continence Nurse

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Abstract

Purpose—The purpose of this study was to compare pressure ulcer prevention programs in 2 long term care facilities (LTC) with diverse Information Technology Sophistication (ITS), one with high sophistication and one with low sophistication, and to identify implications for the Wound Ostomy Continence Nurse (WOC Nurse)

Design—Secondary analysis of narrative data obtained from a mixed methods study.

Subjects and Setting—The study setting was 2 LTC facilities in the Midwestern United States. The sample comprised 39 staff from 2 facilities, including 26 from a high ITS facility and 13 from the low ITS facility. Respondents included Certified Nurse Assistants, Certified Medical Technicians, Restorative Medical Technicians, Social Workers, Registered Nurses, Licensed Practical Nurses, Information Technology staff, Administrators, and Directors.

Methods—This study is a secondary analysis of interviews regarding communication and education strategies in two longterm care agencies. This analysis focused on focus group interviews, which included both direct and non-direct care providers.

Results—Eight themes (codes) were identified in the analysis. Three themes are presented individually with exemplars of communication and education strategies. The analysis revealed specific differences between the high ITS and low ITS facility in regards to education and communication involving pressure ulcer prevention. These differences have direct implications for WOC nurses consulting in the LTC setting.

Conclusions—Findings from this study suggest that effective strategies for staff education and communication regarding PU prevention differ based on the level of ITS within a given facility.

Specific strategies for education and communication are suggested for agencies with high ITS and agencies with low ITS sophistication.

Keywords

Pressure ulcer prevention; information technology sophistication; longterm care; qualitative interviews

Introduction

Because of the significant morbidity, mortality, and healthcare costs associated with pressure ulcers (PU), and widespread consensus that the majority of these wounds are preventable, the Centers for Medicare and Medicaid Services has curtailed reimbursement for facility acquired Stage 3 and Stage 4 pressure ulcers.¹ Thus pressure ulcer prevention is now a fiscal as well as clinical priority for health care agencies in the United States.

Pressure ulcers are particular problems in the long term care (LTC) setting, and patients with PU are more likely to be admitted to a LTC facility.^{2,3} In 2004, the National Nursing Home survey estimated the prevalence of PU among LTC residents as 11%, the most common being stage II.⁴ Horn and colleagues⁵ found that 29% of LTC residents developed a new PU within 12 weeks of admission. NPUAP data published in 2012 documented incidence rates ranging from 3.6 % to 59% and prevalence rates ranging from 8.5% to 32.2%, depending upon whether stage I PU were included in the study.² These data suggest that, despite the existence of evidence-based prevention guidelines and quality indicators, PU continue to be a problem in the LTC setting.

The elderly are particularly high risk for PU development due to multiple factors including poor nutritional status, frailty and impaired mobility.⁶ Factors that add to PU risk specific to the LTC setting include staffing issues, challenges related to nutritional and fluid management, comorbid conditions, polypharmacy, and delayed or incomplete incorporation of evidence-based pressure ulcer prevention protocols.⁵ State of the science education and ongoing communication between staff members is vital to effective implementation of PU prevention and management interventions in this vulnerable population, and one strategy that has been suggested to help improve pressure ulcer prevention and management is the use of information technology.⁷⁻¹⁰ For example, information technology (IT) can assist the staff to gather valid and reliable data in a timely manner to support clinical decision making, and the availability of accurate, point of care clinical data may help improve the quality of PU prevention in individual residents.¹¹ However, there are limited data on the use of IT in prevention of PU in the LTC setting. Therefore, the purpose of this study was to explore education and communication strategies for PU prevention in LTC facilities with diverse ITS (Information Technology Sophistication).

Methods

This study was a secondary analysis of existing narrative data obtained from a mixed methods study that investigated work flow and communication strategies among certified nursing assistants (CNA) in two diverse LTC facilities in a Midwestern state.⁹ The research

methods of the primary study included structured observations, communication network analysis, qualitative focus groups of LTC staff, and quantitative analysis of pressure ulcer prevention communication strategies. A detailed description of the focus group methodology may be found in the original study.⁹ After obtaining approval from the Health Sciences Institutional Review Board, the current study focused specifically on the qualitative analysis of the focus group narrative data including a comparison of direct and non-direct care provider perspectives.

Data Analysis

For this secondary analysis, original digital recordings of the focus groups were transcribed into a Word document for the two facilities per personnel category and shift worked. The transcribed Word document was then entered into NVIVO 9, a software package for qualitative analysis (NVIVO, QSR International, 2011). Data in the form of words, phrases and sentences were coded and assigned categories that represented themes (nodes) about the facilities' communication strategies relevant to pressure ulcer prevention. Themes (nodes) identified the specific communication strategies used by the two facilities participating in the study, and were used to capture factors and processes unique to each facility in regards to communication related to pressure ulcer prevention. Using the word similarity analysis feature in NVIVO, similar words were clustered by nodes and plotted. Links among the nodes and sub-nodes demonstrated interrelationships between communication strategies related to pressure ulcer prevention in the high ITS facility and the low ITS facility. Exemplars were used to bring forth the richness of the communication.

Results

The sample was recruited from 2 LTC facilities located in urban settings in the Midwestern United States; the bed size of the facilities was 60 and 78. One LTC facility was for-profit and the other was a not-for-profit. One was found to have high ITS facility and the other had low ITS facility. Risk adjusted pressure ulcer quality measures for high risk and low risk residents were similar for the high ITS facility (3%, 0%, respectively) and the low ITS facility (3%, 0%, respectively).⁹ A total of 39 personnel participated in the focus groups, consisting of 26 staff members from the high ITS facility and 13 from the low ITS facility. Participants included Certified Nurse Assistants (CNAs), Certified Medical Technicians (CMTs), Restorative Medical Technicians (RMT), Social Workers, Registered Nurses (RNs), Licensed Practical Nurses (LPNs), Information Technology staff, Administrators, and Directors. Participants worked on the day, evening, and night shifts. Table 1 depicts the facility, shift, type of personnel, and years of service of the sample.

Eight themes emerged related to communication strategies for the prevention of pressure ulcers: Bedside Alert, Difficulty with Communication, Education Opportunities, Electronic Communication/Documentation, E-mail, Pressure Ulcer Prevention Strategies, Report Sheets, and Verbal Reports. Differences between the 2 agencies in terms of communication related to pressure ulcer prevention are outlined in Table 2. To evaluate differences in communication patterns between the low and high ITS facilities, we focus on 3 major

themes: 1) Education Opportunities, 2) Electronic Communication and Documentation (Information Access), and 3) Pressure Ulcer Prevention Strategies.

Theme 1: Educational Opportunities

Although PU prevention education was provided to staff at both facilities, participants reported distinct differences in its delivery. In the low ITS facility, educational offerings were accessed through Silver Chair (Silver Chair Information Systems Charlottesville VA), a computer-based education program used in LTC. One direct care provider stated, *“Not much is offered, all staff has 1–2 tests every month on various topics including skin issues, pressure sores and other various topics. All staff do tests on Silver Chair. One computer is available.”* The computer was located in a multi-purpose room to allow care providers access. The room was also used as a beauty salon, which limited access for computer based learning. The combination of limited access and the limited computer availability was considered a barrier by direct care providers.

In contrast, participants at the high ITS facility stated they considered education to be a routine job-related responsibility. Skin care information was shared during orientation of new providers, to current direct care providers via e-mails, and in skin care meetings. For example, when the new picture alerts were implemented, reminder pictures were placed at the time clocks to highlight the new skin care alert protocols. One direct health care provider reported, *“When the program was started with the various pictures, the picture image was embedded in e-mail for them to see it.”* Another direct care provider shared, *“Skin Care team will occasionally have a presentation and inform staff on various issues: things they’ve noticed or what they’ve done, etc.”* Staff meetings provided additional education, as reflected by another focus group participant: *“All staff meetings every month give a run-down of how the month is going. [We] demonstrated positioning techniques recently in a meeting. Nurses’ meetings [occur] every other month with all shifts. If there are any nursing issues, that’s discussed at the Nurses’ meeting”.*

The high ITS facility used Health Stream (Health Stream, Nashville TN) as an educational tool. Focus group attendees stated this online service provided education related to multiple topics including PU care, prevention of falls, hydration, fire safety and Health Insurance Portability and Accountability Act (HIPAA). Each employee was required to complete 3–4 computer-based classes per month. Educational programs were available at work and at home through a password protected login. Education was provided related to new skin care initiatives throughout the facility. The unique aspect of education related to pressure ulcer prevention in the high ITS facility was the fact that educational programming could be accessed through multiple sites and at home to meet the needs of the care providers.

Theme 2: Electronic Communication/Documentation

Electronic communication and documentation was operationally defined as various methods for sharing health information with health care providers and users of the health record. Electronic communication and documentation can be as simple as the use of a telephone or fax machine or as advanced as a totally integrated facility-wide electronic health record (EHR). In the low ITS facility, communication with physicians and outside agencies

occurred primarily via telephone and facsimile machines. The low ITS facility used a paper medical record and the CNA documented exclusively on the activity of daily living sheets (ADLs) and shower sheets. The low ITS staff used paper health records; 24 hour report sheets, ADL sheets, and shower sheets. Staff stated that if a direct care provider was off for 2 or more days, she or he would need to search through the past 24 hour work sheets by hand to obtain information needed to provide care. Although one computer was available and laboratory results were available online, one direct care provider described the situation as follows, “*You don’t use it [the computer] for that; you rely on faxes for the lab results. The Director of Nursing can get in there to use it for lab results but needs a password. The nurses mainly rely on faxes and don’t use the lab reporting.*” The computer was used for mandatory reporting of MDS 3.0 (minimum data set) data by a non-direct care provider. The staff did not discuss the incorporation or use of the MDS data for PU prevention or treatment. Communication was described as frequently incomplete or fragmented, and documentation was limited to RNs and LPNs.

Respondents in the high ITS facility described communication and documentation as occurring via the EHR they further noted that all care providers had access to health care information, and were able to document the care provided. As orders were received or plans of care were assigned, intervention task lists were sent to the direct care providers for implementation through color-coded alerts.

Theme 3: Pressure Ulcer Prevention Strategies

In the low ITS facility, the direct care providers reported their facility used, “*all of them [pressure ulcer prevention strategies].*” A direct care provider further stated that, “*Charge nurses do skin assessments every week.*” Conversely, it was noted by one direct care provider, “*Braden [PU risk assessments] are done on admission and do not reassess.*” Another direct care provider reported “*...turning sheets are posted in [some] rooms, but most are not.*” Another direct care provider reported, “*The staff is real good about taking care of skin and we do not have a lot of pressure ulcers here. If the staff sees a mushy heel, for example, they get the patient started on heel protectors and act accordingly right away.*” While evidence-based pressure ulcer prevention strategies were observed being used in the low ITS facility in the primary study⁹, staff participating in the focus group reported that strategies were identified and implemented based on individual staff knowledge and judgment. They also noted that regular staff meetings had ceased due to scheduling difficulties which further restricted communication related to PU prevention to conversations among the various care providers.

Respondents from the high ITS facility stated that pressure ulcer prevention was driven through skin care guidelines and protocols embedded within the EHR. Direct care providers use the shower sheet to document new reddened skin or areas of concern, “*There are actual boxes that they fill out indicating what part of the body where items were noticed.*” For residents determined to be at increased risk for PU development, respondents reported they followed the facility’s skin care protocol designed by the health care system’s physician and Skin Care Team. The skin care protocols populate task lists for the direct care providers to implement. As an example, when the protocol requires that the patient be turned every 2

hours, participants noted that a pink box appears on the direct care provider's task list reminding staff of the need to complete this preventive intervention. Once the task is completed, checked as done and documented, the pink alert disappears. Skin care tasks for implementation include hydration, hygiene, positioning and nutritional supplementation. Respondents note that preventive interventions are completed by the direct care providers and monitored by charge nurses. Since the skin care protocol and task lists are embedded within the EHR, direct care providers stated they were able to identify the interventions required for PU prevention. One direct care provider stated, *"Intervention list on computer system: used to remind CNAs about different things to do or watch out for. If a patient has a specific skin issue, it is automatic that they get turned every 2 hours, provide peri-care, barrier cream. Anything the CNAs see, they document and report to Charge nurse."*

Discussion

Based on qualitative analysis of staff from 2 LTC facilities with high and low ITS we identified 3 differences in communication strategies related to pressure ulcer prevention. Ongoing pressure ulcer prevention education was more available and more easily accessible to the direct care providers in the high ITS facility. In addition, respondents from the high ITS facility described multiple avenues for direct care staff to access resident-specific health information and document pressure ulcer prevention interventions provided. Finally, we concluded that the communication strategies for PU prevention used by the high ITS facility were of superior quality, quantity, and diversity. Collectively, these conclusions suggest that facilities with low ITS may encounter obstacles when providing PU education to staff, conveying up-to-date resident specific health information, and implementing evidence-based pressure ulcer prevention guidelines. Further research is needed to determine how a WOC nurse can overcome such obstacles and improve the effectiveness of PU prevention in a low ITS facility.

Education Opportunities

Whether a LTC facility has high or low ITS, staff require ongoing education regarding skin care and pressure ulcer prevention. Key components of an evidence-based pressure ulcer prevention program include risk identification and prompt implementation of measures to reduce risk, including the following: strategies to minimize pressure, friction, and shear; appropriate utilization of pressure redistributing support surfaces; management of incontinence; support for optimal nutrition and hydration; and patient/caregiver education.¹² Because regular staff meetings had been discontinued at the low ITS facility due to scheduling difficulties, communication was limited to individual conversations. With support of administration, the WOC nurse could reinstitute staff meetings or identify an alternative approach to the provision of essential education. The WOC nurse would need to assess learning needs related to PU prevention, from both caregiver and administrative perspectives. The WOC nurse could then use the findings to design educational offerings to meet the identified learning needs, based on the agency's level of ITS. Options could include: just-in-time education incorporated into Skin Care Walking Rounds; face to face or online classes on pressure ulcer prevention strategies; skin care product review (face to face or online); hands on practice for prevention strategies such as positioning and heel elevation;

and individual or group counseling on skin care. For individuals unable to attend face to face presentations, digital recordings of presentations could be made available for viewing when convenient; if the staff wished, they could “check out” the recording for use at home. The WOC nurse could also work with vendors to obtain access to “free” educational programs or products or could purchase educational materials from the Wound Ostomy Continence Nurses Society™ or National Pressure Ulcer Advisory Panel. Another option is to pair training sessions with a “poster of the month” displayed in staff break areas.

At a more advanced level, the WOC nurse could assist the facility in the development of skin care champions and a Skin Care Team for the facility. If approved by administration the WOC nurse could also offer Wound Treatment Associate (WTA) training through the Wound Ostomy Continence Nurses Society™¹³. The WTA program is designed for non-specialty licensed direct care providers and medics/corpsmen, and provides extensive education in the areas of pressure ulcer prevention, wound assessment, and wound management. The program must be facilitated by a Certified Wound Care Nurse, who is also responsible for coordinating competency evaluations at the conclusion of the program.

Electronic Communication/Documentation (Information Access)

To address accessibility of needed information, the WOC nurse should initially determine specific information needed by each team member and identify gaps in access. The care provider’s information needs tend to be 2-fold: patient specific information and skin care/pressure ulcer prevention specific information. Patient specific information relates to current skin status, food preferences, fluid needs or restrictions, mobility choices, hygiene, and preferred timing of care. Skin care and pressure ulcer prevention specific information includes evidence based protocols for pressure ulcer prevention, and specific guidelines for skin or wound care. The WOC nurse could then work with administration and direct care providers to review current documentation modes and develop user-friendly format for documentation. Information about PU prevention practices should be visible and easily accessible; low ITS strategies for increasing accessibility include development of skin care notebooks kept on each patient care unit, use of informational posters to increase awareness of key prevention strategies, and other visual cues, such as turning clocks placed at the patient’s bedside. Informational packets could be provided staff use that include a turning clock for the bedside, head of the bed elevation reminder poster, facility specific peri-care recommendations, and standing orders or protocols.^{12, 14} For direct care providers with access to a smart phone at their work place, skin care apps may be purchased or developed to guide care. The NPUAP provides a mobile app available for iPhones, iPads, and Android devices for PU prevention and care.¹⁵ Recently the American Nurses Association (ANA) sponsored a competition for development of smart phone applications for PU prevention; the top 3 entries were Mobile HealthWare, Dermatap, and Wound Mender.¹⁶

Regardless of the level of ITS within the facility, the WOC nurse has a unique opportunity to promote PU prevention through effective use of information technology. Optimal use of this opportunity requires knowledge of information technology and its potential applications to clinical practice. Global steps the WOC nurse should take in optimizing PU prevention include development of a team of essential stake-holders including Health Information

Technology (HIT) personnel; development or adoption of a dictionary of terms specific to pressure ulcer prevention and care; adoption of an evidence-based and nationally accepted protocol for pressure ulcer prevention and management; and collaboration with HIT staff to incorporate the protocol into the agency's EHR system in a user-friendly manner.¹⁷

Limitations

Data were exclusively narrative and was limited to personnel from 2 LTC facilities. We did not follow the LTC facilities related to introduction, adoption or progression of ITS. Other confounding variables may have influenced the differences we identified, such as the facility's business model, the culture of the organization, number and mix of providers, and their receptiveness to change. Finally, the influence of high versus low ITS on PU prevalence and incidence is not known and additional research is needed to address the magnitude of effect of ITS on PU prevention.

Conclusion

Findings from this study suggest that IT may be a useful tool for providing education and communication related to PU prevention, and for enhancing documentation of preventive practices. In order to use information technology, the WOC nurse must become familiar with systems currently in use in affiliated facilities, and collaborate with the information technology specialists and other clinicians to optimize its impact through integration of evidence based protocols into practice.

Acknowledgments

Funding: Grant number K08HS0116862 (PI: Gregory Alexander) from the Agency for Healthcare Research and Quality

References

1. Centers for Medicare and Medicaid (CMS), Department of Health and Human Services. Medicare Program: Hospital inpatient prospective payment system for acute care hospitals and long term-term care Hospital prospective payment system and FY 2012 Rate; hospitals' FTE resident caps for graduate medical education payment. Federal Register. 2012; 76(160) Thursday, August 18, 2011/ Rules and Regulations.
2. Pieper, B., editor. with the National Pressure Ulcer Advisory Panel (NPUAP) Pressure ulcers: Prevalence, incidence, and implications for the future. Washington, DC: NPUAP; 2012.
3. Russo, CA.; Steiner, C.; Spector, W. Healthcare Cost and Utilization Project. Agency for Healthcare Research and Quality; 2008. Hospitalizations related to pressure ulcers among adults 18 years and older, 2006. Retrieved from: <http://www.hcup-us.gov/reports/statbrirfs/sb64.pdf.statbriefs/sb64.pdf> [last accessed July 11, 2011]
4. Park-Lee E, Caffrey C. Pressure ulcers among nursing home residents: United States- 2004. National Center for Health Statistics. 2009; 14:1-7.
5. Horn S, Bender S, Bergstrom N, Cook A, Ferguson M, Smout R, Voss A. The National Pressure Ulcer Long Term Study: Pressure Ulcer Development in Long Term Care Residents. American Geriatrics Society. 2004; 52:359-367.
6. Spirduso, W.; Francis, K.; MacRea, P. Physical Dimensions of aging. Champaign, IL: Human Kinetics; 2005.
7. Fossum M, Ehnfors M, Svensson E, Hansen LM, Ehrenberg A. Effects of a computerized decision support system on care planning for pressure ulcers and malnutrition in nursing homes: An

- intervention study. *International Journal of Medical Informatics*. 2013; 82(10):911–921. [PubMed: 23827767]
8. Fossum M, Alexander GL, Ehrenberg A, Ehnfors M. Effects of a Clinical Decision Support System on Pressure Ulcers and Malnutrition in Nursing Homes. *International Journal of Medical Informatics*. 2011; 80(9):607–617. [PubMed: 21783409]
 9. Alexander, G.; Steege, L.; Pasupathy, K.; Wise, K. Case Studies of IT sophistication in nursing homes: A mixed method approach to examine communication strategies about pressure ulcer prevention practices. *International Journal of Industrial Ergonomics*. Available online January 11, 2013 <http://dx.doi.org/10.1016/j.ergon.2012.12.002>
 10. Roadmap for Health IT in Long Term Care 2008–2010. American Health Information Association Summit; 2008.
 11. Rantz M, Hicks L, Petroski G, Madisen R, Alexander G, Galambos C, Greenwald L. Cost, staffing and quality impact of bedside electronic medical record (EMR) in nursing homes. *Journal of American Medical Directors Association*. 2009; 11:485–493.10.1016/j.jamada.2009.11.010
 12. The Wound Ostomy Continence Nurses Society™. 2 WOCN Clinical Practice Guideline Series. 2010. Guideline for Prevention and Management of Pressure Ulcers.
 13. The Wound Ostomy Continence Nurses Society™. Wound Treatment Task Force. Jun. 2011 Position Statement about the Role and Scope of Practice of Wound Care Providers.
 14. Preventing Pressure Ulcers in Hospitals: A Toolkit for Improving Quality of Care. Agency for Healthcare Research and Quality; Rockville, MD: Apr. 2011 <http://www.ahrq.gov/professionals/systems/long-term-care/resources/pressure-ulcers/pressureulcertoolkit/index.html>
 15. National Pressure Ulcer Advisory Panel (NPUAP). Mobile App of NPUAP/EPUAP Pressure Ulcer Prevention & Treatment Quick Reference Guide Now. 2009. Available for iPhone, iPad and Android Devices!<http://www.npuap.org/mobile-app-of-npuapepuap-pressure-ulcer-prevention-treatment-quick-reference-guide-now-available-for-iphone-ipad-and-android-devices/>
 16. Murphy, J. Using Health IT to Mobilize Data for Pressure Ulcer Prevention, Health IT Buss, Health Innovation. Jul 12. 2013 <http://www.healthit.gov/buzz-blog/health-innovation/health-mobilize-data-pressure-ulcer-prevention/>
 17. Health IT Collaboration. A Road Map for Health IT in Long-Term and Post-Acute Care (LTPAC). 2012–2014.
 18. TeamSTEPPS® Long-Term Care Version. Agency for Healthcare Research and Quality; Rockville, MD: Oct. 2012 <http://www.ahrq.gov/professionals/education/curriculum-tools/teamstepps/longtermcare/index.html>
 19. The Wound Ostomy Continence Nurses Society™. Profession Practice Manual. 4. Wolters Kluwer-Lippincott and Williams & Wilkins;

Table 1

Facility, Shift, Type of Personnel, and Years of Service of the Sample (N=39)

	High ITS Facility (n)	Range of Experience (yrs)	Low ITS Facility (n)	Range of Experience (yrs)
<u>Day Shift</u>				
<u>Non-Nurses</u>	5	1–10	3	20–27
CNA/CMT				
<u>Nurses</u>				
MDS Coord/LPN/RN)	5	0.42 – 11	3	1.5 – 24
<u>Evening Shift</u>				
<u>Non-Nurses</u>	5	2 – 25	3	1 – 20
CNA/RMT/CMT)				
<u>Nurses</u>				
(LPN)	2	0.42– 25	1	0.17
<u>Night Shift</u>				
<u>Non-Nurses</u>	4	3 –13	0	
CNA				
<u>Administration</u>				
Director/DON	3	13 – 21	3	2 – 30
Social services director				
<u>IT department</u>				
IT Staff	2	18 – 22	0	0
Total	26		13	

CMT: Certified Medication Technician, CNA: Certified Nurse Assistant, DON: Director of Nursing, IT: Information Technology ITS: Information Technology Sophistication, LPN: Licensed Practical Nurse, MDS Coord.: Minimal Data Set Coordinator, RMT: Restorative Medical Technician, RN: Registered Nurse.

Table 2

Results by Themes and Communication Strategies per Information Technology Sophistication (ITS)

Theme	Communication Strategies	
	<u>Group 1: High ITS</u>	<u>Group 2: Low ITS</u>
Bedside alert	Laminated picture cards on door to alert providers of resident needs: Honey Bee-thickened liquids, Hummingbird-thickened nectar, Red Socks-fall, Pup-Pressure Ulcer Prevention, Raindrop-hydration, Snow flake-lotion, EHR status board	Informal notes, ADL sheets, turning schedules used inconsistently; direct care providers would like alerts on door jam
Difficulty with communication	Communication occurred via EHR which was a change from face to face to interaction with EHR (Change in communication style)	Communication reported as short, not shared to all direct care providers or omitted
Education opportunities	Educational programming available via any facility computer & at home with a password; monthly education & hands on practice; 3–4 educational programs a month; skin care orientation; new program education (laminated door alerts); & monthly meetings	Educational programming available via one computer in a multi-purpose area which had limited access, 1–2 education programs a month
Electronic communication documentation	Ready access to health care providers via EHR; physician orders & health care orders available on entry into EHR; documented at point of care with use of evidence-based protocols & task lists	Fax machine & telephone and use a paper medical record
E-mail	Integral method of communication, from educational reminders to intervention lists in the EHR	Email not utilized
Pressure ulcer prevention strategies	Evidence-based protocols used as basis for pressure ulcer prevention strategies, along with risk assessments, bedside alerts, & color-coded intervention lists/schedules in EHR	Pressure ulcer risk assessment completed on admission but reassessments reported as inconsistent; turning schedules not in all rooms
Report Sheets	Report sheets incorporated into the EHR & available to direct and non-direct care providers; Computer access available in physician's office, nurse's station, resident care wings or residents' bedside; Information available for all direct and non-direct care providers.	24 hour report sheet used by nurses as a hand written historical document of new orders; updates & changes in resident's condition. To retrieve information each 24 hour report sheet must be hand searched
Verbal report	Walking rounds with nurses', huddles in concert with EHR review at bedside with nurses'	Nurses receive verbal reports, CNAs receive limited report or report from prior shift CNA