Published in final edited form as:

J Hosp Manag Health Policy. 2019 September ; 3: . doi:10.21037/jhmhp.2019.08.01.

A Health System's Pilot Experience with Using Social Knowledge Networking (SKN) Technology to Enable Meaningful Use of EHR Medication Reconciliation Technology

Pavani Rangachari¹, Kevin C. Dellsperger², R. Karl Rethemeyer³

¹Department of Interdisciplinary Health Sciences College of Allied Health Sciences Augusta University, Augusta, GA

²Cardiovascular Division, Department of Medicine, Medical College of Georgia, Augusta University, Augusta, GA

³Rockefeller College of Public Affairs and Policy, University at Albany, State University of New York (SUNY), Albany, NY

Abstract

Similar to issues faced in health systems across USA, AU Health, based in Augusta, Georgia, faced a scenario of low physician engagement in, and limited-use of its Electronic Health Record (EHR) Medication Reconciliation (MedRec) technology, which translated to high rates of medication discrepancies and low accuracy of the patient's active medication list, during transitions of care. In fall 2016, a two-year grant was secured from the U.S. Agency for Healthcare Research and Quality (AHRQ), to pilot a Social Knowledge Networking (SKN) system pertaining to "EHR-MedRec," to enable AU Health to progress from "limited use" of EHR MedRec technology, to "meaningful use."

The rationale behind an SKN system, is that it could provide a platform for inter-professional knowledge exchange on practice issues related to EHR MedRec, across diverse provider subgroups and care settings, to highlight adverse consequences of gaps in practice for patient safety, and emphasize the value of adhering to best-practices in EHR MedRec. This, in turn, is expected to increase provider *engagement* in addressing issues related to EHR MedRec, and promote inter-professional *learning* of best-practices, to create a foundation for practice *change* or improvement (e.g., Meaningful Use of EHR MedRec technology).

Correspondence to: Dr. Pavani Rangachari, PhD. Department of Interdisciplinary Health Sciences, College of Allied Health Sciences, Augusta University, 987 St. Sebastian Way, Augusta, GA, 30912 prangachari@augusta.edu.

Conflicts of Interest: None to declare.

Financial Disclosure: None to declare.

Ethical Assurance: This study was approved by the Institutional Review Board (IRB) Human Assurance Committee at Augusta University (No. 911182-3)

Figures 1-3 & Supporting Material 1

- Figures 1-3 are attached in separate Word Files and as individual JPEG files.
- Supporting Material 1 is attached as a Word file.

This Case Report describes AU Health's experiences with this novel initiative to pilot an SKN system for enabling Meaningful Use of EHR MedRec technology. It also discusses lessons learned in regard to the potential of an SKN system to enable inter-professional learning and practice improvement in the context of EHR MedRec, which, in turn, helps identify strategies and practice implications for healthcare managers.

Keywords

Electronic Health Records; Medication Reconciliation; Social Knowledge Networks; Meaningful Use; Inter-Professional Learning; Transitions-of-Care; Patient Safety; Change Implementation

Introduction

Patient safety advocates have long promoted the use of Medication Reconciliation, to help prevent medication discrepancies and errors during transitions of care. Transitions of care (from outpatient to inpatient, and back to outpatient settings), are commonly experienced by patients with chronic conditions (e.g., heart disease, diabetes, and stroke). Medication Reconciliation (MedRec) refers to the formal process for creating a complete and accurate list of a patient's current medications during transitions of care. The process of MedRec involves: (i) developing a list of the patient's current medications; (ii) developing a list of the medications to be prescribed; (iii) comparing the medications on the two lists; (iv) making clinical decisions to update the medication list, based on the comparison; and (v) communicating the final updated medication list to both the patient/family and the next providers of care (1, 2).

The goal of MedRec is to reduce medication discrepancies and errors during care transitions, and provide an accurate active medication list to patients/families *and* their next providers of care, to promote patient safety and quality of care. Since 2005, Medication MedRec has been part of the Joint Commission's hospital accreditation program, and more recently, it has become part of the Electronic Health Record (EHR) Meaningful Use requirements. Meaningful Use (MU) of EHR MedRec technology refers to effective use of the EHR MedRec system by providers, to complete the MedRec process (outlined above), to reduce medication discrepancies and promote medication-list accuracy, during care transitions (3, 4). Given the heightened risk of medication errors during transitions of care, the Meaningful Use of EHR MedRec technology has potential to significantly improve patient care quality & safety, reduce healthcare disparities, control costs, and engage patients/families in healthcare delivery.

Despite the regulatory impetus towards MU of EHR MedRec technology however, hospital adherence has continued to lag at a national level; and studies in turn, have ascribed this trend to low physician engagement in EHR MedRec, emanating from an absence of shared (collective) understanding among providers of 1) the responsibilities of each professional subgroup (e.g., hospitalist doctor vs. community doctor) in managing a patient's medication list, and 2) the value of MedRec as a clinical tool for promoting patient safety (5–10). Not surprisingly therefore, several recent studies have found that although federal vendors of EHR systems have been enhancing functionalities associated with MedRec over time,

hospitals are continuing to use partially paper-based processes during care transitions (11–13). In other words, there is “limited use” of EHR MedRec technology in hospitals and health systems across USA, as opposed to “meaningful use” (14, 15).

In fall 2016, a two-year grant was secured from the U.S. Agency for Healthcare Research and Quality (AHRQ), to pilot a Social Knowledge Networking (SKN) system pertaining to Electronic Health Record (EHR) Medication Reconciliation (MedRec), at the Augusta University Health System, AU Health. The theoretical rationale for introducing an SKN system on EHR MedRec (which emanates from complex systems and social network theories), is that it could provide a platform for inter-professional knowledge exchange on practice issues related to EHR MedRec, across diverse provider subgroups and care settings, to highlight adverse consequences of gaps in practice for patient safety (e.g., not using the electronic medication history function resulted in an error in recording dosage upon admission, which, in turn, resulted in adverse event for the patient). This, in turn, is expected to increase physician *engagement* in addressing issues related to EHR MedRec; and promote inter-professional *learning* of best practices related to EHR MedRec (e.g., using the electronic medication history to generate the current medication list during each encounter), to provide a foundation for practice *change*, e.g., Meaningful Use of EHR MedRec technology (16–27).

This Case Report describes AU Health’s experiences with this novel initiative to pilot an SKN system for enabling Meaningful Use of EHR MedRec technology. It also discusses lessons learned in regard to the potential of an SKN system to enable inter-professional learning and practice improvement in the context of EHR MedRec, which, in turn, helps identify strategies and practice implications for healthcare managers.

Case Presentation

The Augusta University (AU) Health System, AU Health, is a health care network offering comprehensive primary, specialty and subspecialty care in the region. Facilities include a 478-bed AU Medical Center, more than 80 outpatient practice sites, a Critical Care Center housing a regional trauma center, and a 154-bed Children’s Hospital. The health system averages approximately 21,000 inpatient discharges and 90,000 emergency room visits per year. Medicare and Medicaid together account for over 50% of the patient care revenues. In 2016, AU Health faced challenges with the use and implementation of its EHR MedRec system (which is powered by Cerner Inc., a federally certified EHR vendor). Although MedRec was often marked as “complete” on the EHR, before patient discharge from the hospital, AU Health leadership estimated the patient’s active medication list to be inaccurate (with discrepancies between patient’s home and hospital medication lists in regard to drugs, dosages, and frequencies), for a majority of discharged cases. Importantly, there was consensus among administrators, that the EHR MedRec system was not being used effectively to communicate changes in the patient’s active medication list across the provider continuum and to patients/families. This challenge, in turn, was ascribed to the general reluctance of physicians to discontinue medications that they did not originally order from the active medication list, which in turn, led to not only medication discrepancies during

care transitions, but also to frustrations associated with inaccurate and incomplete medication lists, among patients and providers across the continuum.

In summary, AU Health faced a scenario that was reflective of national concerns (across USA) related to use and implementation of EHR MedRec technology in hospitals & health systems, i.e., *low physician engagement*, translating to *limited-use* of EHR MedRec technology. In fall 2016, a two-year grant was secured from AHRQ, to pilot an SKN system on EHR MedRec, for the purpose of enabling AU Health to progress from “limited use” of EHR MedRec Technology, to “meaningful use.” The rationale was that an SKN system would enable inter-professional knowledge exchange on practice issues related to EHR MedRec, across diverse provider subgroups and settings-of-care, which, in turn, was expected to increase provider *engagement*, promote inter-professional *learning* of best-practices, and provide a foundation for practice *change* or improvement (i.e., Meaningful Use of EHR MedRec technology) (16–27).

The pilot implementation of the SKN system on EHR MedRec, was conducted over a one-year period at AU Health, i.e., April 1, 2017-to-March 31, 2018 (Q2 2017-Q1 2018) among diverse provider subgroups and care settings, i.e., physicians, nurses, and pharmacists based in outpatient and inpatient medicine settings. The system was comprised of several components:

- ***SKN Reporting Tool***: an online form that allowed participating providers (SKN Users) to report practice issues related to EHR MedRec (e.g., challenges in obtaining complete information at admission for compiling the patient’s current medication list). The form allowed users to provide a brief description of the issue and indicate the care settings and patient conditions it applies to.
- ***SKN Discussion Tool (Microsoft Yammer)***: an online platform separate from the SKN Reporting Tool, to enable moderated discussions on issues related to EHR MedRec. Microsoft Yammer is an example of an enterprise SKN system. Our pilot project used the basic version of Yammer, which was available to AU as part of its Office 365 package.
- ***SKN Lunch-and-Learn Sessions***: A total of 5 SKN Lunch-and-Learn sessions were held over the one-year SKN period, for participants to meet and discuss lessons learned from exchanges on SKN Yammer. Advance invitations to these sessions were sent to all SKN participants.
- ***SKN Periodic Email Updates***: Approximately 15 periodic progress update emails were sent by the Principal Investigator (PI) to all SKN participants, over the one-year SKN period.

There were two types of participants in the SKN system:

1. ***SKN Moderators***: included a group of 5 senior administrators who played a key role in moderating discussions on issues related to EHR MedRec among participants (SKN Users) over the one-year SKN period. The 5 SKN moderators included the Chief Medical Officer (CMO), Chief Medical Information Officer (CMIO), two hospitalist chiefs, and the Principal Investigator (PI). A key

responsibility of SKN Moderators was to bring issues related to EHR MedRec reported by individual SKN Users on the SKN Reporting Tool, for discussion by all SKN Users on Yammer. As such, a majority of threads-of-discussion on Yammer began with an issue-report (problem statement) brought to Yammer by SKN Moderators. Another responsibility of SKN Moderators was to proactively initiate discussions on topics relevant to EHR MedRec (e.g., best practices identified in the literature), and bring lessons learned from the SKN system, for discussion at regular health system meetings, including the Hospital Quality Council.

2. **SKN Users:** included 50 practitioners, i.e., physicians, nurses, and pharmacists based in outpatient and inpatient medicine services at AU Health, who agreed to participate in the SKN system. Key responsibilities of SKN Users were to 1) report issues related to EHR MedRec on the SKN Reporting Tool on an ongoing basis; 2) participate in moderated discussions on SKN Yammer, over the one-year period; and 3) share lessons learned from their ongoing participation on the SKN, with colleagues in the health system. However, SKN Users were *not allowed* to initiate new threads-of-discussion directly on SKN Yammer. This ability was restricted to SKN Moderators, to enable coordinated discussions of issues related to EHR MedRec on the SKN system.

Participant recruitment to the SKN system, began after the project received IRB approval from Augusta University. All practitioners in three professional subgroups, i.e., physicians, nurses, and pharmacists, within five inpatient and outpatient medicine service lines at AU Health, including Cardiology, Internal Medicine, Family Medicine, Emergency Medicine, and Hospitalist service lines, were approached by the PI for recruitment using the IRB-approved informed consent process. Cardiology was the only medicine subspecialty included in the project. A total of 50 practitioners were recruited to participate as SKN Users, including 15 physicians, 15 nurses, and 20 pharmacists, from outpatient and inpatient medicine settings. All participating physicians from Cardiology, Internal Medicine, and Family Medicine, practiced in both inpatient and outpatient settings. Only Hospitalists were exclusively inpatient practitioners.

Participants received a detailed orientation to the SKN system, prior to its launch, including steps for accessing the *SKN Reporting Tool* and *SKN Yammer*, both of which were made available to participants through separate links within the EHR at AU Health. Both tools were also accessible through the enterprise employee web portal and through mobile devices. Additionally, Yammer was downloadable as an App. Figure 1 provides a web screenshot of the SKN Reporting Tool; Figure 2 provides a web screenshot of SKN Yammer; and Figure 3 provides web screenshots of participants' access to both tools via both the EHR system and the AU employee enterprise web portal.

Of the 50 practitioners who signed up to be SKN Users, 25 were active users of SKN Yammer, with 10 or more posts over the one-year SKN period. Active users of Yammer came from all professional subgroups and care settings represented on the SKN, including 8 physicians, 8 nurses, and 9 pharmacists. Additionally, 3 of the 5 SKN Moderators (including the CMO, CMIO, and PI), each posted 40 or more messages on Yammer.

Over the one-year SKN period there were a total of 485 posted communications on Yammer, divided into 62 threads-of-discussion. Of these, 45 threads had 3 or more posts; among which, 12 threads had 10 or more posts; of which 3 threads had 25 or more posts, including 1 thread with 45 posts. There were a total of 32 issues related to EHR MedRec reported on the SKN Reporting Tool, over the one-year period. Of the 45 threads with 3 or more posts, 32 began with issues (problem statements) reported on the SKN Reporting Tool, brought in to Yammer by SKN Moderators. As such, *all* issues related to EHR MedRec that were reported on the SKN Reporting Tool, were used to launch threads-of-discussion on Yammer. All threads-of-discussion on Yammer, were open and available to all SKN Users, without restriction. Yammer recorded the name, date, and time associated with each posting.

Thematic analysis of the content of inter-professional knowledge exchange on Yammer, over the one-year period, revealed six broad themes that were repeated across several threads-of-discussion, in the chronological order outlined below (28–30).

1. Problem Statements
2. Problem-Solving Statements (“The How-To”)
3. IT System Education (“The What”)
4. Best-Practice Assertions (“The Why”)
5. Culture Change Assertions (“The Way-To”)
6. Collective Learning (“Aha”) Moments

An example of a practice issue related to EHR MedRec, for which inter-professional discussions progressed through the full spectrum of themes from “problem statements” to “collective learning (aha) moments,” was the ***“Importation of External Rx History during Patient Encounters,”*** which pertained to the broader theme of improving communication related to the patient’s active medication list, across the continuum of providers. Supporting Material 1 provides additional information related to the dynamics of inter-professional knowledge exchange on the SKN system, pertaining to the topic of “External Rx History Import.”

“External Rx History Import” refers to the importation of the patient’s medication history filled at their pharmacy, by the provider (at the start of the patient encounter), by activating the Rx History button on the EHR, which, in turn, would access the Surescripts system to pull the patient’s Rx history. Surescripts is an IT company that supports e-prescription, the electronic transmission of prescriptions between healthcare organizations (HCOs) and pharmacies. According to the US DHHS, in 2014, 96% of US pharmacies used the Surescripts network (31). At AU Health, it was determined that 90% of patients fill their prescriptions at pharmacies that participate in the Surescripts system.

Discussions related to External Rx History Import began with a ***problem statement*** from an Emergency Department (ED) Nurse in regard to the challenge of obtaining the correct medication history from the patient upon arrival, to formulate the current medication list for reconciliation. In response, an outpatient nurse suggested use of the “External Rx History Import,” functionality within the EHR, for obtaining a current medication list for

reconciliation. However, this suggestion was initially met with resistance. For example, the ED nurse argued that the External Rx History was not completely accurate, and therefore could not be trusted, and another provider, a Cardiology physician argued that relying on the External Rx History when the patient does not have all the ‘pill bottles,’ could create errors. These disagreements were met with **problem-solving statements** from other providers. For example, a hospitalist physician argued that even if an electronic list of medications cannot be fully trusted, it could provide a starting point for discussing with patients what they are actually taking. Such statements were then followed by **IT system education**, e.g., clarifications related to the External Rx History functionality on the EHR by the CMIO/SKN Moderator, which in turn, was followed by **best-practice assertions** from pharmacists, i.e., articulations of the benefits of adhering to and consequences of not adhering to the best practice of External Rx History Import. For example, a pharmacist argued that importing “External Rx History,” preferably as close to admission as possible, is essential since it includes “over 90% of what actually occurred in the community.” While there may be some gaps, the External Rx History would at least allow providers to know what the patient has been prescribed and help them question why they are not taking certain medications. The CMO/SKN Moderator then helped to reinforce these best practice assertions, by providing examples of recent cases where dosing errors could have been averted if the External Rx History option had been used. Another pharmacist then put forth a **culture change assertion**, urging participants to not allow “perfection to become the enemy of the good,” arguing that, when prescribers do not act to reconcile a medication owing to insufficient information, they are making a decision to “do nothing.” The CMO/SKN Moderator helped to reinforce this message by arguing that ED patients and hospital-to-hospital transfers have little ability to provide medication history, making the importation of External Rx History, all the more important. These discussions in turn, culminated in a **collective learning (aha) moment** summarized by the PI/SKN Moderator, in that, “incremental efforts to improve the accuracy of the current medication list, by leveraging the External Rx History Import function, could go a long way in reducing medication discrepancies during care transitions.” The second SKN Lunch-and-Learn session (held in July 2017), provided an opportunity for SKN Moderators to meet face-to-face with several SKN Users, to summarize lessons learned from Yammer on the topic of External Rx History Import; and reinforce the collective learning (aha) moments on this topic.

The aforementioned inter-professional learning dynamics in turn, coincided with a distinct improvement trend in the “*Proportion of External Rx History Import*” among *Congestive Heart Failure (CHF) patient encounters in the 5 participating medicine service lines* at AU Health, during and beyond the SKN period. This measure may be regarded as a “measure of Meaningful Use (MU) of EHR MedRec,” or a measure of best practice in EHR MedRec, because a higher proportion, reflects better use of the EHR system by providers, to obtain a current medication list, for reconciling with new prescriptions, to improve medication-list accuracy, during transitions of care. A detailed description of the trend in this measure of MU of EHR MedRec technology, before and after the one-year SKN period, among the participating medicine service lines, is provided in a previously published article (32). This open-access publication, available in full-text through this link <https://doi.org/10.2147/JHL.S198951>, is a comprehensive qualitative research paper that emanated from the “SKN

project” at AU Health, i.e., the same initiative that provided the basis for this Case Report. In addition to providing a detailed graphical depiction and narrative discussion of the trend in the measure of MU of EHR MedRec technology mentioned above, this previous publication includes substantive contextual detail related to the SKN Project that could serve as a useful supplement to the information contained in this Case Report, for interested readers.

Discussion

The health system’s pilot experiences suggest that an SKN system could be a valuable tool for *engaging* providers to share knowledge on practice issues and promote inter-professional *learning* of best-practices, to create a foundation for practice *change/improvement*, i.e., EHR Meaningful Use. Importantly, the experience suggests that the SKN system enabled progress towards MU of EHR MedRec, by addressing the challenges of implementing EHR MedRec, in the correct sequence, i.e., by facilitating collective learning (or shared understanding) of the value of adhering to best-practices in EHR MedRec for patient safety (i.e., the “big picture”), *before* IT-training of providers to address socio-technical challenges of EHR implementation (e.g., reconciling differing system-views across provider subgroups).

The pilot experience also suggests that an SKN system may be a particularly valuable tool for institutions where practice change (e.g., MU of EHR technology) needs to occur with existing resources, through workflow changes; as opposed to new resource outlays, e.g., dedicated pharmacy techs in each and every unit within the health system. Additionally, the experience suggests that the health IT components of the SKN system, e.g., SKN Yammer and the non-health-IT components, e.g., SKN Lunch-and-Learn sessions, served to not only complement, but also reinforce each other, synergistically, to enable inter-professional learning, and provide a foundation for practice change (i.e., MU of EHR MedRec technology).

This suggests that the experiences with this SKN pilot effort, could provide a foundation for identifying strategies for the creation of “learning health systems,” to enable successful change implementation in HCOs. For example, the experience provides insights into strategies for the design of effective knowledge sharing networks, for enabling inter-professional learning and practice change in HCOs. This is a significant contribution to healthcare management practice, particularly in the context of a growing body of literature that has argued for health IT initiatives to be evaluated using a “health system” lens, i.e., from a broader perspective of achieving health system goals. In other words, hospital IT initiatives should be able to be integrated into existing health system functions, and complement health system goals, to avoid being perceived as silo or stand-alone solutions (33). This paper provides a meaningful example of a pilot hospital IT initiative that was integrated into a broader health system goal of developing a “learning health system,” to enable Meaningful Use of EHR MedRec technology.

Conclusion

Overall, the health system’s pilot experience suggests that an SKN system could be a valuable tool in enabling inter-professional learning to promote complex practice change

(e.g., MU of EHR technology). Future research could help to evaluate the generalizability of experiences in this case, through large-scale controlled experiments to investigate causal relationships between SKN Use and Meaningful Use of EHR technology, across a wide variety of HCOs. These types of research endeavors turn, would help to generate a systematic evidence-base of strategies for promoting Meaningful Use of EHR technology, which, in turn, could be used to prompt federal EHR vendors to incorporate SKN features into EHR systems.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgements

The authors wish to thank the senior leadership, staff, and clinicians at AU Health for their support and collaboration in conducting this project. We are also grateful to the Agency for Healthcare Research and Quality (AHRQ) for sponsoring this project.

Funding Support: This project that was supported by grant number R21HS024335 from the Agency for Healthcare Research and Quality (AHRQ).

References

1. Agency for Healthcare Research and Quality. Patient Safety Primer: Medication Reconciliation. <https://psnet.ahrq.gov/primers/primer/1/medication-reconciliation>; Retrieved: October 15, 2017.
2. Barnsteiner JH. Medication Reconciliation In: Hughes RG, editor. Patient Safety and Quality: An Evidence-Based Handbook for Clinicians. Rockville (MD): Agency for Healthcare Research and Quality (US) 2008; Chapter 38 Available from: <http://www.ncbi.nlm.nih.gov/books/NBK2648/>
3. Centers for Medicare and Medicaid Services. Stage 2 Eligible Professional Meaningful Use Core Measures Measure 14 of 17. https://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/downloads/Stage2_EPCore_14_MedicationReconciliation.pdf; Retrieved: September 25, 2016.
4. HealthIT.Gov. Achieving Meaningful Use Stage 2: Medication Reconciliation. <https://www.healthit.gov/providers-professionals/achieve-meaningful-use/core-measures-2/medication-reconciliation>. Retrieved: August 10, 2016.
5. Boockvar KS, Santos SL, Kushniruk A, et al. Medication reconciliation: barriers and facilitators from the perspectives of physicians and pharmacists. *J Hosp Med* 2011; 6:329–337. [PubMed: 21834114]
6. Clay BJ, Halasyamani L, Stucky ER, et al. Results of a medication reconciliation survey from the 2006 Society of Hospital Medicine National Meeting. *J Hosp Med* 2008; 3:465–472. [PubMed: 19084896]
7. Rose AJ, Fischer SH, Pasche-Orlow MK. Beyond Medication Reconciliation: The Correct Medication List. *J Am Med Assoc* 2017; 317(20):2057–2058.
8. Sanchez HS, Sadie SS, Santos SL, et al. Implementing medication reconciliation from the planner's perspective: a qualitative study. *BMC Health Serv Res* 2014; 14:290. [PubMed: 24996538]
9. Greenwald JL, Halasyamani L, Greene J, et al. Making inpatient medication reconciliation patient centered, clinically relevant and implementable: a consensus statement on key principles and first steps. *J Hosp Med* 2010; 5(8):477–485. [PubMed: 20945473]
10. Van Sluisveld N, Zegers M, Natsch S, et al. Medication reconciliation at hospital admission and discharge: insufficient knowledge, unclear task reallocation and lack of collaboration as major barriers to medication safety. *BMC Health Serv Res* 2012; 12:170. [PubMed: 22721361]

11. Grossman J, Gourevitch R, Cross DA. Hospital experiences using electronic health records to support medication reconciliation. National Institute for Healthcare Reform (NIHCR) 2014; Research Brief Number 17.
12. Mueller SK, Sponsler KC, Kripalani S, et al. Hospital-based medication reconciliation practices: a systematic review. *Arch Int Med* 2012; 172:1057–1069. [PubMed: 22733210]
13. Porcelli PJ, Waltman LR, Brown SH. A Review of Medication Reconciliation Issues and Experiences with Clinical Staff and Information Systems. *App Clin Inf* 2010; 1:442–461.
14. Rangachari P Overcoming the Unintended Adverse Consequences of Implementing Health IT through Human Resource and Knowledge Management In Blair JD, Fottler MD, and Savage GT (Eds.), *Adv Healthc Manag* 2010; 9:163–194. Bingley, UK: Emerald.
15. Smith P Med Wreck: Proposing a Solution for the Nightmare of Medication Reconciliation; eBook; <https://healthitaccelerator.com/med-wreck/>; Retrieved: October 16, 2017.
16. Agency for Healthcare Research and Quality. Using Social Knowledge Networking (SKN) Technology to Enable Meaningful Use of EHR Technology; <https://healthit.ahrq.gov/ahrq-funded-projects/using-social-knowledge-networking-skn-technology-enable-meaningful-use-ehr>. Retrieved: June 15, 2017.
17. Rangachari P Implementing a Social Knowledge Networking (SKN) System to Enable Meaningful Use of an EHR Medication Reconciliation System: A Study Protocol. *Risk Manag Healthc Policy* 2018; 11: 45–53. [PubMed: 29618941]
18. Anderson A, McDaniel R. Managing health care organizations: where professionalism meets complexity science. *Health Care Manage Rev* 2000; 25(1): 83–92. [PubMed: 10710732]
19. Burt R Network Structure of Social Capital In Sutton RI, Staw BM (Eds.), *Research in Organizational Behavior* 2000; 22: 345–423. Greenwich, CT: JAI Press.
20. Hansen MT. The search-transfer problem: Role of weak ties in sharing knowledge across organizational units. *Adm Sci Q* 1999; 44(1): 82–111.
21. Plsek P Redesigning health care with insights from the science of complex adaptive systems (Appendix B, 309Y322) In Institute of Medicine, *Crossing the quality chasm* 2001; Washington, DC: National Academies Press.
22. Rangachari P Knowledge sharing networks related to hospital quality measurement and reporting. *Health Care Manage Rev* 2008; 33(3): 253–263. [PubMed: 18580305]
23. Rangachari P Knowledge sharing networks in professional complex systems. *J Knowl Manag* 2009; 13(3): 132–145.
24. Rangachari P Knowledge sharing and organizational learning in the context of hospital infection prevention. *Qual Manag Health Care* 2010; 19(1): 34–45. [PubMed: 20042932]
25. Rangachari P Using social knowledge networking technology to enable meaningful use of electronic health record technology in hospitals and health systems: A review article. *J Hosp Adm Administration* 2014; 3(6): 66–78.
26. Rangachari P, Madaio M, Rethemeyer RK, et al. The evolution of knowledge exchanges enabling successful practice change in two intensive care units. *Health Care Manage Rev* 2015; 40(1):65–78. [PubMed: 24153028]
27. Rangachari P, Madaio M, Rethemeyer RK, et al. Cumulative impact of periodic top-down quality improvement communications on infection prevention practices and outcomes in two units. *Health Care Manage Rev* 2015; 40(4):324–36. [PubMed: 25120195]
28. Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol* 2006; 3(2):77–101.
29. Elo S, Kyngas H. The qualitative content analysis process. *J Adv Nurs* 2007; 62(1):107Y115.
30. Richards L Using NVivo in Qualitative Research. London, 1999; Sage ISBN 0-7619-6525-4.
31. Gabriel MH, Swain M. E-prescribing trends in the United States. *ONC Data Brief*. Office of the National Coordinator for Health IT 2014; Retrieved: September 9, 2015.
32. Rangachari P, Dellsperger KC, Rethemeyer R. A qualitative study of inter-professional learning related to electronic health record (EHR) medication reconciliation within a social knowledge networking (SKN) system. *J Healthc Leadersh* 2019; 11: 23–41. [PubMed: 31114416]

33. Labrique AB, Vasudevan L, Kochi E, et al. mHealth innovations as health system strengthening tools: 12 common applications and a visual framework; Glob Health Sci Pract 2013; 1(2):160–171. [PubMed: 25276529]

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

SKN Reporting Tool: For Issues Related to EHR Medication Reconciliation

The purpose of this tool is to facilitate reporting of issues related to EHR Medication Reconciliation by ALL Health practitioners. Please complete all the FIVE questions (as requested below), and press "Submit" when completed.

PLEASE DO NOT USE ANY PATIENT IDENTIFIERS/PHI IN THIS FORM!

1. Please indicate the issue category *

2. Please briefly describe the patient's primary and secondary diagnoses, example Heart Failure; Hypertension; Atrial Fibrillation; Risk for Thromboembolic events, etc. *

Please DO NOT enter any patient identifiers/PHI in this form.

Enter your answer

3. Please indicate the unit/care setting this issue applies to (check all that apply) *

☐ Emergency Department

☐ Inpatient setting

☐ Outpatient clinic setting

☐ Primary care setting

☐ Other

4. Please describe the issue in detail *

Please DO NOT enter any patient identifiers/PHI in this form.

Enter your answer

5. Please describe possible solutions to this issue. *

Please DO NOT enter any patient identifiers/PHI in this form.

Enter your answer

Submit

Links to SKN Tools on EHR System

Links to SKN Tools on Enterprise Portal