The AIAMC National Initiative:
Improving Patient Care through GME

FINAL PROJECT REPORTS

National Initiative

**Meeting 5
October 31—November 1
San Antonio, TX**

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OVERVIEW OF THE NATIONAL INITIATIVE

Improving Patient Care through GME: A National Initiative of Independent Academic Medical Centers was designed to illustrate how graduate medical education can serve as a driver to improve patient safety. More than 35 participants from nineteen AIAMC-member teaching hospitals were selected to participate based upon their demonstrated leadership in utilizing graduate medical education as a key driver to improve quality, patient safety, and the cost-effectiveness of care. From March 2007 through November 2008, five on-site meetings and monthly conference calls provided structure, discussion and networking opportunities around specific quality improvement initiatives.

The Initiative used the IHI 5-Million Lives campaign as the backbone for linking residents with improvements in patient care. By doing so, the residency programs, the hospital administration and the hospital Boards of Directors were aligned in a mutual effort to improve patient care. This approach was markedly different from previous residency quality improvement initiatives that had often been peripheral and disconnected from the priorities of the hospital leadership. Participants implemented individual projects within their home institutions in one of the following three areas:

- ***Hand-Offs:*** focused upon exchange of key information, using electronic medical record when possible, during key transitions including inpatient to outpatient and shift-to-shift;
- ***Infection Control:*** focused upon IHI interventions of preventing central line infections and reducing MRSA infection;
- ***Transitions of Care:*** focused upon IHI interventions of preventing adverse drug events (ADEs), preventing harm from high-alert medications and delivering reliable evidence-based care for congestive heart failure.

The following *Final Project Reports* were presented at the fifth and final meeting of the 2007-08 National Initiative. These reports describe the designs and outcomes of the participating institutions' individual projects.

NATIONAL INITIATIVE

Final Project Report

This final report of your project will be compiled with those of other participating institutions to form a key component of the final report of the National Initiative. This report will be distributed to Alliance members and to external audiences. Members are at different points in this journey so the objective is NOT to compare one NI participant to another but instead to provide guidance to others who are starting this journey or want to accelerate their activities. Please be concise since we are looking for "Abstract" level of detail.

Institution: Advocate Lutheran General Hospital_____

Submitter: _Stuart L. Goldman, MD and Judith A. Gravdal, MD_____

Project Name: _Medication Reconciliation at Hospital Discharge_____

Project Aim: Address discrepancies in medication reconciliation at discharge from hospital

Project Team Members (Names, Titles, Role in Institution)

Name	Title in Institution	Role in Project
Stuart L Goldman, MD	**Vice Chair, Department of Family Medicine**	**P.I.**
Judith A. Gravdal, MD	**Chair, Department of Family Medicine**	**Co-Investigator**

National Initiative Final Project Report

Topic	Description
Project Name	Medication Reconciliation at Hospital Discharge
Project Location (e.g., specific clinic, room)	Advocate Lutheran General Hospital
Which IHI initiative(s) does your project address?	**Medication Reconciliation**
Description of the intervention you defined (e.g., sticking the Curel bottle on the table next to the charts)	Resident review of discharge medications with patient Entering discharge medications into office EMR
Measure of observation (if more than one measure was used, list each)	#Discrepancies/patient #Discrepancies/100 medications
Describe the measurement tool you developed (e.g., check-list)	Medication Reconciliation Form (Cerner) Logicare form Allscripts Touchworks

Topic	Description
Identify who used the tool to collect data (e.g., resident)	Interns on the Family Medicine Service completed the Medication Reconciliation Form and the EMR medication list

Drs. Goldman and Gravdal reviewed all 3 forms to tally discrepancies |
| What was the pre-intervention measurement for your measure (if available)? If you applied more than one measure, list the measurement for each. | Medication Reconciliation and Logicare |
| What was the post-intervention measurement for your measure? For example, 81% of charts had documented reconciliation of medications in the discharge summary and medications on the patient discharge instructions. | Data collection continues/results are preliminary |
| Please describe any other outcomes resulting from your NI project.

        Qualitative outcomes: | |
| Other important outcomes: | Better understanding of the complexity of the processes |
| Please describe any unintended consequences from your project. | |

Topic	Description
<u>Positive unintended consequences</u>:	
<u>Negative unintended consequences</u>:	Identified an increased number of discrepancies
Your learning from designing and executing your NI project – briefly answer each of these questions: 1) What were the three greatest challenges you encountered?	1) finding time to work on the project (Sundays) 2) time line for completion of the project 3) lack of data extraction assistant
2) What were the three most important success factors?	Involvement of residents
3) Are there additional resources that you wish had been available for this project?	Data extraction personnel
4) On a scale of 1 to 10, how much of what you set out to do in your project were you able to achieve by today?	1 2 3 X4 5 6 7 8 9 10 Nothing Everything
5) Also on a scale of 1 to 10, how satisfied are you with what you	1 2 3 X4 5 6 7 8 9 10

Topic	Description
were able to accomplish on your NI project?	Very Dissatisfied Very Satisfied
6) What single most important advice would you give to another leader embarking on a similar initiative?	Train residents in a consistent and iterative fashion
Briefly describe any next steps on your NI project or any changes and initiatives that may have resulted from it in your organization.	Refine process to include PRN and OTC medications consistently Re-educate residents (and attendings) Continue to collect and report data

NATIONAL INITIATIVE

Final Project Report Due March 15

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Institution: ___Atlantic Health - Goryeb Children's outpatient clinics_____

Submitter: _____Pooja Vani, MD_____

Project Name: _____Medication Safety Collaborative_____

Project Aim: **To have a complete, accurate and available medication reconciliation form in each patient chart.**

Project Team Members (Names, Titles, Role in Institution)

Name	Title in Institution	Role in Project
Pooja Vani	MD, PGY-1	Researcher/data collector
Sara Little	MD, PGY-1	Researcher/data collector
Julieanna Sahouria	MD	Pediatric Chief Resident
Alan Meltzer	MD	Pediatric Program Director
Donna Daniel	PhD	Team Facilitator

National Initiative Final Project Report

Topic	Description
Project Name	Medication Safety Collaborative
Project Location (e.g., specific clinic, room)	Our project entails medication reconciliation data at 2 separate outpatient pediatric clinics: 1) Family Health Center- Morristown, NJ (Morristown Hospital) 2) Health Start- Summit, NJ (Overlook Hospital)
Which IHI initiative(s) does your project address?	Medication Safety; pediatric population
Description of the intervention you defined (e.g., sticking the Curel bottle on the table next to the charts)	Lead residents held orientation for all residents at their respective clinics about importance and methods and asked them to follow the process outlined below. 1. Check each chart for medication form before entering patient's room 2. Review the medication list/updates with the family/patient 3. Either a) place an updated medication list in the chart, or b) if there was already a form in the chart, make sure it is updated/accurate with the visit information 4. Fill out a "data collection chart" on the main board for ease of data collection for project measures/run charts ▪ For new patients, the medication reconciliation form is added to new charts and states "no medications;" this is to be updated by residents as the medications change and/or get added. Lead residents provided staff/attending education and raised awareness beyond their residency program by reporting progress to Atlantic Health Senior Management as well as at the Pediatric Business Meeting to enlist support and involvement.

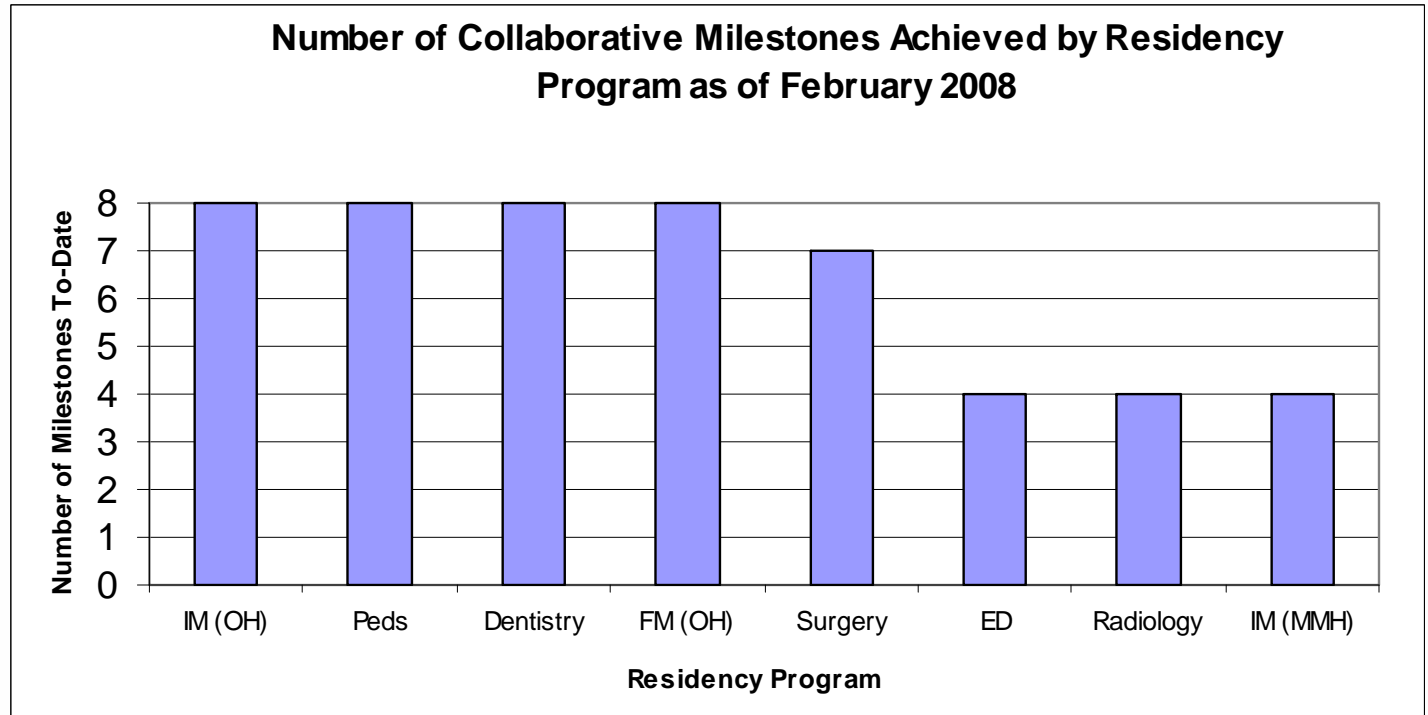| Topic	Description
Measure of observation (if more than one measure was used, list each)	Percent of Cases with Medication Reconciliation Documented in the Chart Percent of Charts in which the Resident added the Medication Reconciliation Form when it was Missing
Describe the measurement tool you developed (e.g., check-list)	Both locations: Data sheets with every resident's name; each resident is responsible to fill out their portion. Categories included: Total #charts seen, charts with MR forms BEFORE, #of charts with ADDED forms, and #of charts with MR forms AFTER. In addition, at FHC, the staff in front is responsible for checking charts before and after and have their own data sheet. Both clinics compile their data in an Excel tracking tool which produces run charts.
Identify who used the tool to collect data (e.g., resident)	1) HS: Residents 2) FHC: Residents and medical assistant staff
What was the pre-intervention measurement for your measure (if available)? If you applied more than one measure, list the measurement for each.	At both clinics, 0% of charts had a medication reconciliation form included!
What was the post-intervention measurement for your measure? For example, 81% of charts had documented reconciliation of medications in the discharge summary and medications on the patient discharge instructions.	As of Mid- February: 1) HS: 70-80% of charts with MR form, 100% accurate 2) FHC: 50-60% of chart with MR form, 100%accurate
Please describe any other outcomes resulting from your NI project. Qualitative outcomes:	Most importantly, we noticed a qualitative increase in the # of charts with a MR form in the chart. We also noted the % of MR forms placed into the chart that was accurate and complete.

Topic	Description
<u>Other important outcomes</u>:	We were able to educate not only our fellow residents but also were able to reach to other members of the medical community, including nursing, attendings, secretaries, medical assistants, and many more.
Please describe any unintended consequences from your project. <u>Positive unintended consequences</u>:	Residents were required to be aware of each patient's medications, thus aiding in our goal to create an environment in which less medication error occurs.
<u>Negative unintended consequences</u>:	Due to the difference between HS's traditional paper records and FHC's electronic patient records as well as electronic prescription program, study design, measures and results also began to differ, thus making it harder to compare the 2 outpatient clinic settings.
Your learning from designing and executing your NI project – briefly answer each of these questions: 1) What were the three greatest challenges you encountered?	1) Resident education and involvement 2) As stated above, differences between paper and electronic records 3) Specific MR form questions; i.e.) what do we do if the patient is not currently on any medications, but has been in the past? What if the medications were prescribed elsewhere (specific challenges for FHC due to electronic systems).
2) What were the three most important success factors?	1) Increasing % of charts with MR forms included 2) Increasing resident involvement 3) Having 100% of forms being accurate and complete
3) Are there additional resources that you wish had been available for this project?	Help with using specific computer programs for data assimilation.
4) On a scale of 1 to 10, how much of what you set out to do in your	FHC: 6

Residents Lead Medication Reconciliation

Number of Collaborative Milestones Achieved by Residency Program as of February 2008

Milestones include: (1) Attendance at Learning Session #1, (2) Completion of an Initial PDSA Cycle, (3) Presentation on Initiative to Residency Program, (4) Completion of a Process Flow Diagram, (5) Attendance at Learning Session #2, (6) Presentation on Progress to Residency Program, (7) Initial Data Report, (8) Final Project Report.

NATIONAL INITIATIVE

Final Project Report

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Institution: **Baystate Medical Center**

Submitter: **Kevin T Hinchey**

Project Name: Electronic Handoff tool

Project Aim: Develop a tool that would be used by both nursing and physician at the time of inpatient handoffs.

Project Team Members (Names, Titles, Role in Institution)

Name	Title in Institution	Role in Project

National Initiative Final Project Report

Topic	Description
Project Name	**Electronic Handoff Tool**
Project Location (e.g., specific clinic, room)	Inpatient General Medicine Floors
Which IHI initiative(s) does your project address?	communication
Description of the intervention you defined (e.g., sticking the Curel bottle on the table next to the charts)	Groups of nurses and Resident Physician independently were talking about redesigning a handover tool. Groups merged and got institutional support for project Agreed on common data for both groups and then data specific to the group and then data that one group wanted from the other.
Measure of observation (if more than one measure was used, list each)	Accuracy of medication on hand over tool Use of new tool Subjective utility of hand over tool
Describe the measurement tool you developed (e.g., check-list)	Check list with comments
Identify who used the tool to collect data (e.g., resident)	Health care quality personnel
What was the pre-intervention measurement for your measure (if available)? If you applied more than one measure, list the measurement for each.	Pre intervention was that the data on the residents handover-hand written-was not always up to data. Nursing want a more useful tool tied into the computer documentation. 95% of time medication were not 100% accurate(dose, PRN, interval, spelling) Labs not up to date
What was the post-intervention measurement for your measure? For example, 81% of charts had documented reconciliation of medications in the discharge summary and medications on the patient discharge instructions.	Meds 100% accurate and up to data using new handover tool. Lab- up to date including pending labs Use 100% by nurses and residents
Please describe any other outcomes resulting from your NI project.	Now The tool has been modified for pedi and is used in critical care units and pedi hospital

National Initiative

Final Project Report

Topic	Description
<u>Qualitative outcomes</u>:	
<u>Other important outcomes</u>:	This has lead to another group made up of physicians and nurses to look at other ways we can collaborate.
Please describe any unintended consequences from your project. <u>Positive unintended consequences</u>:	This has lead to another group made up of physicians and nurses to look at other ways we can collaborate.
<u>Negative unintended consequences</u>:	The handover is part of the medical record +/- a negative
Your learning from designing and executing your NI project – briefly answer each of these questions: 1) What were the three greatest challenges you encountered?	Time from IS to work with us. Buy in from none resident physicians
2) What were the three most important success factors?	Joint need Hospital leadership buy in and support
3) Are there additional resources that you wish had been available for this project?	
4) On a scale of 1 to 10, how much of what you set out to do in your project were you able to achieve by today?	10- though this has lead to even great projects
5) Also on a scale of 1 to 10, how satisfied are you with what you were able to accomplish on your NI project?	10

Topic	Description
6) What single most important advice would you give to another leader embarking on a similar initiative?	Get support from the "higher up"- align your goals with those of the institution.
Briefly describe any next steps on your NI project or any changes and initiatives that may have resulted from it in your organization.	We are now working on an electronic progress note that would pull all the wanted information from the data base to facilitate ongoing care. Progress note, handover tool all in one.

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Institution: **Christiana Care Health Services**

Submitter: **Lee Ann Riesenberg, PhD, RN**

Project Name: **A Web-based System to Enhance Surgical Resident Handoff and Communication**

Project Aim: **To provide safe, accurate, and complete handoff communication on a busy surgical service in a commuity teaching hospital**

Project Team Members (Names, Titles, Role in Institution)

Name	Title in Institution	Role in Project
Nicole Fox, MD, MPH	Resident, General Surgery	Principal Investigator
Lee Ann Riesenberg, PhD, RN	Director Medical Education Research and Outcomes	Advisor, Co-Investigator
Frederick Giberson, MD, FACS	Program Director General Surgery Residency	Co-investigator
Brian W. Little, MD, PhD	VP Academic Affairs & Research	Advisor
Chuck Malloy	Information Services Specialist	IS/IT Advisor

National Initiative Final Project Report

Topic	Description
Project Name	**A Web-based System to Enhance Surgical Resident Handoff and Communication**
Project Location (e.g., specific clinic, room)	**Internal Internet Web site available throughout institution**
Which IHI initiative(s) does your project address?	**Prevent Surgical Complications**
Description of the intervention you defined (e.g., sticking the Curel bottle on the table next to the charts)	**Enhance presently available medical unit web-based resident and faculty handoff tool to surgical services**
Measure of observation (if more than one measure was used, list each)	**Resident satisfaction** **Perceived resident efficiency** **Test and procedure follow-up** **Resident peerception of decreased errors**
Describe the measurement tool you developed (e.g., check-list)	**Survey questionnaire**
Identify who used the tool to collect data (e.g., resident)	**Principal Investigator**
What was the pre-intervention measurement for your measure (if available)? If you applied more than one measure, list the measurement for each.	**Survey of residents**
What was the post-intervention measurement for your measure? For example, 81% of charts had documented reconciliation of medications in the discharge summary and medications on the patient discharge instructions.	**Survey of residents - not yet done** **Survey of physician assistants on service**

Topic	Description
Please describe any other outcomes resulting from your NI project. Qualitative outcomes:	**Not completed**
Other important outcomes:	
Please describe any unintended consequences from your project. Positive unintended consequences:	**Unknown**
Negative unintended consequences:	**Unknown**
Your learning from designing and executing your NI project – briefly answer each of these questions: 1) What were the three greatest challenges you encountered?	**Convincing Information Services of the importance of the project, when they have other institutional projects with higher priorities.**
2) What were the three most important success factors?	**Resident appreciation that the system proposed would be a better way**
Are there additional resources that you wish had been available for this project?	**Independent Information Services programming resources dedicated to project**
3) On a scale of 1 to 10, how much of what you set out to do in your project were you able to achieve	**4**

Topic	Description
by today?	
4) Also on a scale of 1 to 10, how satisfied are you with what you were able to accomplish on your NI project?	**6**
5) What single most important advice would you give to another leader embarking on a similar initiative?	**Get guaranteed Information Services/Information Technology support**
Briefly describe any next steps on your NI project or any changes and initiatives that may have resulted from it in your organization.	**Complete installation and test for six months.** **Resident Post-survey**

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Institution: *Regions Hospital/HealthPartners*

Submitter: *Jerome Siy, M.D.*
Sarah Roark, M.D.

Project Name: *Leveraging the Electronic Medical Record to Improve Handoffs and Transitions of Care*

Project Aim: *Improve shift to shift handoffs between medical residents And improve patient care.*

Project Team Members (Names, Titles, Role in Institution)

Name	Title in Institution	Role in Project
Jerome Siy, M.D.	*Chief of Hospital Medicine*	*Organizer*
Sarah Roark, M.D.	*IM Resident PGY-3*	*Primary Investigator*
Brian Reiter	*EMR Analyst*	*Technical Expertise*

National Initiative Final Project Report

Topic	Description
Project Name	*Leveraging the Electronic Medical Record to Improve Handoffs and Transitions of Care*
Project Location	*Regions Hospital, University of Minnesota Internal Medicine Residency*
Which IHI initiative(s) does your project address?	*Handoffs and Transitions of Care*
Description of the intervention you defined (e.g., sticking the Curel bottle on the table next to the charts)	*Translated a previously studied and developed handoff tool into the EMR*
Measure of observation (if more than one measure was used, list each)	*User satisfaction with use, quality*
Describe the measurement tool you developed (e.g., checklist)	*Survey questionnaire*
Identify who used the tool to collect data	*Resident*
What was the pre-intervention measurement for your measure (if available)? If you applied more than one measure, list the measurement for each.	*None*
What was the post-intervention measurement for your measure? Example: 81% of charts had documented reconciliation of medications in the discharge summary and medications on the patient discharge instructions.	*Survey of all residents after initial use*
Please describe any other outcomes resulting from your NI project. **Qualitative Outcomes:** **Other Important Outcomes:**	*Continued revisions to the product. Anticipated use by attendings.*

Topic	Description
Please describe any unintended consequences from your project.	
Positive unintended consequences:	*Identification of other important needs in the handoff, e.g. less paper waste.*
Negative unintended consequences:	*Abandonment of tool in favor of the previous tool.*
Your learning from designing and executing your NI project- briefly answer each of these questions:	
1. **What were the three greatest challenges you encountered?**	*Limitations of the EMR.* *Long wait times to program the EMR.*
2. **What were the three most important success factors?**	*Buy in from residents to test new tools.* *Buy in from the EMR/Hospital to devote time to this.*
3. **Are there additional resources that you wish had been available for this project?**	*Resident time. She did this on her own time.*
4. **On a scale of 1 to 10, how much of what you set out to do in your project were you able to achieve today?**	*7*
5. **Also on a scale of 1 to 10, how satisfied are you with what you were able to accomplish on your NI project?**	*7*
6. **What single most important advice would you give to another leader embarking on a similar initiative?**	*Engage your residents at all stages of the project.*
Briefly describe any next steps on your NI project or any changes and initiatives that may have resulted from it in your organization.	*Continued improvement and testing of the tool. Eventually roll it out to other residency programs and attendings.*

NATIONAL INITIATIVE

Final Project Report

Institution: Iowa Health-Des Moines

Submitter: Julie A. Gibbons

Project Name: Impact of an educational program on central line insertion technique, central line infection prevention knowledge, and central line related bloodstream infections

Project Aims:

1. Improve resident physician knowledge of infection prevention

2. Ascertain and improve the surgery resident's use of the entire central line insertion bundle in adult critical care units by May 2009

3. Decrease the potential for central line associated bloodstream infections

4. Increase awareness of the link between patient safety/quality initiatives and graduate medical education among all stakeholders

Project Team Members:

Name	Title in Institution	Role in Project
Julie A. Gibbons, RN, BSN	Nurse Epidemiologist	Project coordinator, principal investigator
Lisa A. Veach, MD	Hospital Epidemiologist, Infectious Disease Physician	Faculty for didactic program, co-investigator, test development, project oversight
Richard A. Sidwell, MD	Program Director, General Surgery Residency	Faculty for central line insertion, project oversight
Anne E. Modrzynski, MD	Surgery Resident	Project coordinator, resident champion
Piper L. Wall, DVM, PhD	Staff Scientist	Data analysis, poster presentation
Douglas B. Dorner, MD	Senior Vice President, Medical Education & Research; Director of Medical Education/ACGME Designated Institutional Official	Executive sponsor, project leadership
Mark W. Purtle, MD	Vice President of Medical Affairs	Executive sponsor, project leadership

National Initiative Final Project Report – Iowa Health-Des Moines

Topic	Description
Project Name	Impact of an educational program on central line insertion technique, central line infection prevention knowledge, and central line related bloodstream infections
Project Location	Surgery Residents in the Iowa Methodist Medical Center adult critical care ICU/CCU, Des Moines, Iowa
Institute for Healthcare Improvement Initiatives Addressed	• Improving compliance with central line insertion bundles • Decreasing hospital acquired infections
Intervention Description	The intervention consisted of a one-hour didactic class on preventing device related infections and a central line insertion simulation for first and second year surgery residents. This was part of a larger, eight-hour class that focused on preventing infections in acute care. The seven-hour, didactic portion of the program was provided to all resident physicians. A protocol application was submitted to the institutional review board, who determined the project was exempt under the educational settings category.
Measure of Observation Including the Measurement Tool	Correct central line insertion procedural compliance was assessed pre- and post-class via checklists completed by nurses assisting with the procedure in the adult ICU. The checklist options included yes, no, or unsure. The percentage of checklists available for review versus the number of central lines inserted was estimated by comparing catheter insertion kit inventory to the number of checklists completed. Central line infection prevention knowledge was assessed via pre- and post-class scores on two test questions specific to central line insertion. The impact of the seven-hour, "Preventing Infections in Acute Care" class on overall infection prevention knowledge was also assessed using pre- and post-class test score comparisons (27 questions). The tests were completed and recorded electronically. Central line related bloodstream infection information was evaluated for pre- and post-class time intervals by nurse epidemiologists according to the National Health and Safety Network definition.
Pre- and Post Intervention Measurement	Central line insertion technique: 9 pre-class and 59 post-class checklists were available for review. Of these, 5 pre-class and 15 post-class lines were inserted by surgery residents (the others were inserted by staff physicians or non-surgery residents). The number of "unsure" checklist responses during the pre-class period versus the post-class period suggests that a "checklist learning curve" existed (pre-class responses of "unsure" or blank responses occurred in 5 of 9 versus only 1 of 19 in the post-class period. The "unsure" option was

Topic	Description
	removed from the checklist in March 2008. Despite this, a suggestion of post-class improvement in insertion technique exists (0 of 5 surgery resident pre-class checklists indicated compliance with all components of correct insertion technique versus 13 of 15 for the post-class insertion checklist). Central line infection prevention knowledge of surgery residents: All 17 surgery residents completed the pre- and post-class test. Concerning the 2 central line infection related questions, 15 of 17 and 11 of 17 answered the questions correctly on the pre-class test. All 17 and 14 of 17 answered the same 2 questions correctly on the post-class test. Surgery resident percent correct for entire "Preventing Infections In Acute Care" test:

	Pre- Test Scores	Post Test Scores	Improvement by individual surgical residents
Mean	52%	68%	16%
Median	51%	63%	15%
Range	33-59%	56-89%	-3 to 30%

Central line related bloodstream infections: The central line related bloodstream infection rate decreased from the pre- to post-class time intervals, with the central line didactic and simulations occurring December 2007.

Central line related bloodstream infection rate for adult critical care pilot unit:

	Quarter 3, 2007	Quarter 4, 2007	Quarter 1, 2008	Quarter 2, 2008
Number of infections	2	2	0	0
Catheter days	775	752	1,311	1,042
Rate per 1000 catheter days	2.52	2.66	0	0

Topic	Description
Other Important Outcomes	• A team approach for central line insertion education is being used with the simulations. • The "Preventing Infections in Acute Care" test was revised to better assess resident knowledge. The scenario based questions are now being reviewed with all residents in a follow-up class to assess retention of knowledge and reinforce learning. • An awareness of a checklist learning curve for staff was identified. • There is increased awareness of the link between patient safety/quality initiatives and graduate medical education among faculty, residents and staff.

Topic	Description
Positive Unintended Consequences	The use of a checklist to measure compliance in the ICU may have a Hawthorn-like effect among the residents and staff. It also empowers nurses to remind providers of the insertion technique bundle elements.
Negative Unintended Consequences	With the exception of dialysis catheter kits, the hospital uses central line insertion kits that include all the items needed for maximum barrier precautions. The need to obtain additional supplies to comply with the maximum barrier precautions when inserting dialysis catheters was frustrating and resulted in negative feedback about the initiative.
Three Greatest Challenges Encountered	• Determining the total number of central lines inserted in the ICU: We were concerned about the number of the checklists that were available for review and the possibility of bias. Billing and ICU procedural codes can not currently be used to identify the number of central lines placed. From November 2007 through January 2008, only 24 checklists were turned in, but a central supply inventory utilization inquiry for all central line kits reported a net of 31 kits charged to the ICU. This suggests a 77% checklist completion rate. From March 2008 through September 2008, 45 checklists were turned in and the inventory utilization report also showed 45 central line kits charged to the pilot unit. This suggests an improved checklist completion rate of 100% for this time period. • Determining which central line was related to a bloodstream infection: Bloodstream infections are rare, and those few patients who develop one may have had several central lines, including subclavian and peripherally inserted central lines. • Communicating instructions to all ICU nursing staff: The ICU has a large nursing staff, including people who only work weekends. This made it difficult to ensure complete dissemination of instructions regarding the central line insertion bundle, which includes all staff wearing a mask when within 3 feet of the patient, and regarding completion of the central line insertion checklist.
Three Most Important Success Factors	• The surgery program director participated as the instructor for the central line insertion simulation and placed priority on resident attendance and completion of the pre- and post-class tests. • The hospital epidemiologist developed and presented the didactic information and was actively engaged in the project. • The nursing staff participated by completing the checklists.
Additional Resources That You Wish Had Been Available	None, the resources provided along with those available on the Institute for Healthcare Improvement web site met our needs.

Topic	Description
On a scale of 1 to 10, how much of what you set out to do in your project were you able to achieve by today?	1 2 3 4 5 6 7 8 9 10 Nothing Everything
Also on a scale of 1 to 10, how satisfied are you with what you were able to accomplish on your NI project?	1 2 3 4 5 6 7 8 9 10 Very Dissatisfied Very Satisfied
What single most important advice would you give to another leader embarking on a similar initiative?	Engage program directors, residents, faculty and staff from areas that will be impacted by the initiative. This is achieved by having a project leader who is knowledgeable about process improvement and patient safety.
Describe any next steps on your NI project or any changes and initiatives that may have resulted from it in your organization.	• New internal medicine residents will complete central line simulations. • Feed back is being provided periodically to residents regarding results. • Improvement opportunities for inserting peripherally inserted central catheters and central line care have been identified and improvements are under way. • The practicality of developing a tracking mechanism for the number of central lines inserted will be determined. • The "Preventing Infections in Acute Care" class and test was revised for the 2008-09 resident class to better meet their needs and assess their knowledge. • Incorporation of the central line checklist into the procedural note is being explored. • All necessary maximum barrier supplies will be added to the dialysis kits. • Improve staff physician compliance with the central line bundle.

NATIONAL INITIATIVE

Final Project Report : Maine Medical Center

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Institution:

Maine Medical Center

Submitter:

George L. Higgins III, M.D., F.A.C.E.P.

Project Name:

The Impact of the Implementation of an Electronic Hand-off Tool on Patient Safety and Clinician Satisfaction within an Academic ED

Project Aim:

Study Hypothesis: The implementation of an electronic hand-off tool to communicate the status of ED patients at the change of shift between Emergency Medicine residents and faculty will be viewed as adding value to patient safety, efficient communication, and educational activities

Project Team Members (Names, Titles, Role in Institution)

Name	Title in Institution	Role in Project
George L. Higgins III, M.D.	**Research Director, Department of Emergency Medicine**	**Co-PI**
James Little, M.D.	**Resident, Department of Emergency Medicine**	**Co-PI**
Daniel Britton, M.D.	**Resident, Department of Emergency Medicine**	**Co-PI**

National Initiative Final Project Report

Topic	Description
Project Name	The Impact of the Implementation of an Electronic Hand-off Tool on Patient Safety and Clinician Satisfaction within an Academic ED
Project Location (e.g., specific clinic, room)	Academic Emergency Department with 24 Emergency Medicine residents; 20 faculty; 57,000 annual patient visits; and an electronic patient management system with 100% CPOE compliance by medical providers
Which IHI initiative(s) does your project address?	Patient and family centeredness Effective and safe communication
Description of the intervention you defined (e.g., sticking the Curel bottle on the table next to the charts)	Utilizing the Eclipsys electronic patient management system that already exists within the ED and taking advantage of the 100% CPOE compliance by Emergency Medicine faulty and residents at our institution, we will embed an electronic, single-screen hand-off instrument that is easily accessed by a dedicated tab on the main menu. This instrument will auto-populate with essential patient data such as most recent vital signs, allergies, medications administered and ordered, laboratory results and DRN status. In addition, there will be additional fields that allow hand-off providers to specifically identify outstanding issues (e.g. "follow-up with repeat orthostatic BP after 2L NS" or "call family at 799-59XX once final disposition determined"). A field is also dedicated for documenting that these follow-up tasks were completed or that they remain unresolved. Completion of these fields will be expected for any patient requiring hand-off at the time to shift change. Residents will hand-off to residents and faculty will hand-off to faculty.
Measure of observation (if more than one measure was used, list each)	Measurement of pre- and post-implementation faculty and resident satisfaction relating to: Efficiency of and time required for hand-offs Quality and effectiveness of hand-off communication Adherence to patient management plans Quantity of missed or delayed tasks Incidence of "near misses" or direct patient harm

Topic	Description
	Impression of patient safety at the time of hand-offs Ease of patient follow-up for educational purposes
Describe the measurement tool you developed (e.g., check-list)	Pre- and post-implementation survey instrument
Identify who used the tool to collect data (e.g., resident)	PGY-1 through 3 Emergency Medicine residents Emergency Medicine faculty Central collection and evaluation by co-PI's (two EM residents, 1 EM faculty)
What was the pre-intervention measurement for your measure (if available)? If you applied more than one measure, list the measurement for each.	Percentage of study participants who answered the survey questions as either Agree/Strongly Agree or Disagree/Strongly Disagree
What was the post-intervention measurement for your measure? For example, 81% of charts had documented reconciliation of medications in the discharge summary and medications on the patient discharge instructions.	Percentage of study participants who answered the survey questions as either Agree/Strongly Agree or Disagree/Strongly Disagree
Please describe any other outcomes resulting from your NI project. <u>**Qualitative outcomes**</u>:	NA
<u>**Other important outcomes**</u>:	NA
Please describe any unintended consequences from your project. <u>**Positive unintended consequences**</u>:	Implementation of the electronic hand-off tool will be quickly embraced by Emergency Medicine providers, resulting in resident/faculty interest in studying its impact on ED to inpatient services hand-offs, as well as on ED to outpatient providers.
<u>**Negative unintended consequences**</u>:	The electronic hand-off tool will be perceived as too time consuming for too little value by Emergency Medicine providers, resulting in future

Topic	Description
	resistant to other potential electronic communication solutions.
Your learning from designing and executing your NI project – briefly answer each of these questions: 1) What were the three greatest challenges you encountered?	Engaging and consistently meeting with busy, although interested and committed, Emergency Medicine residents Developing and vetting the survey instrument Securing project management resources for data collection and other study-related tasks
2) What were the three most important success factors?	Robust clinical technology and physician connectivity A strong institutional culture of safe patient and family centered care Inquisitive and motivated Emergency Medicine residents who are expected to responsibly conduct a scholarly project
3) Are there additional resources that you wish had been available for this project?	There can never be too many capable project managers when it comes to conducting clinical research.
4) On a scale of 1 to 10, how much of what you set out to do in your project were you able to achieve by today?	1 2 3X 4 5 6 7 8 9 10 Nothing Everything Note: Research project on track and schedule
5) Also on a scale of 1 to 10, how satisfied are you with what you were able to accomplish on your NI project?	1 2 3 4 5 6 7 8 9X 10 Very Dissatisfied Very Satisfied Note: Research project on track and schedule
6) What single most important advice would you give to another leader embarking on a similar initiative?	Limit and sharpen-up the study question to be relevant, interesting, and feasible. Engage an energized resident co-investigator early.
Briefly describe any next steps on your NI project or any changes and initiatives that may have resulted from it in your	Complete and submit an Emergency Medicine research grant for study funding Receive expedited IRB approval

Topic	Description
organization.	Continue to prepare for study execution

NATIONAL INITIATIVE

Final Project Report

This final report of your project will be compiled with those of other participating institutions to form a key component of the final report of the National Initiative. This report will be distributed to Alliance members and to external audiences. Members are at different points in this journey so the objective is NOT to compare one NI participant to another but instead to provide guidance to others who are starting this journey or want to accelerate their activities. Please be concise since we are looking for "Abstract" level of detail.

Institution: ____**MedStar Health**_____

Submitter: ____**Jamie S Padmore**_____

Project Name: _____**Implementation of a Central Line Training Program in GME to reduce Blood Stream Infection Rates Across a System**_____

Project Aim: <u>**To decrease BSI rates through training in Central Line Insertion**</u>_____

Project Team Members (Names, Titles, Role in Institution)

Name	Title in Institution	Role in Project
Jamie S Padmore	AVP, Academic Affairs (MedStar)	Project Lead/Coordinator for System
Janis M Orlowski MD	Sr VP & CMO, Washington Hospital Center	Site Coordinator
Nancy Donegan, MPH	Director, Infection Control (WHC)	Coordination of activities, education
Linda O Morrison	Director GME (WHC)	Administrative Support / Database and Coordination of activities
Pam Leonard	Director, Simulation Lab	Development of educational materials and simulation

		curriculum
Helen Turner,	AVP Medical Affairs / Quality – Georgetown	Quality coordination, data
Jennifer M Brewer	Director, GME (GUH)	Administrative support, data, and coordination of activities

National Initiative Final Project Report

Topic	Description
Project Name	Implementation of a Central Line Training Program in GME to Reduce Blood Stream Infection Rates
Project Location (e.g., specific clinic, room)	Washington Hospital Center and Georgetown University Hospital
Which IHI initiative(s) does your project address?	Infections
Description of the intervention you defined (e.g., sticking the Curel bottle on the table next to the charts)	1. Determination of which GME residency programs should be inserting central lines 2. Development of an educational module (computerized), focused simulation training, and supervised instruction prior to insertion of a central line 3. Focus on sterile field
Measure of observation (if more than one measure was used, list each)	Overall Blood stream infection rates
Describe the measurement tool you developed (e.g., check-list)	Only measured blood stream infection rates; also tracked who was trained, date trained, and subsequent credentialing.
Identify who used the tool to collect data (e.g., resident)	Quality improvement / resource staff
What was the pre-intervention measurement for your measure (if available)? If you applied more than one measure, list the measurement for each.	Calendar Year 2007 - - used BSI rates for Q1 and Q2; conducted intervention during Q2; measured BSI Q3 and Q4 as post-implementation.
What was the post-intervention	BSI rates

Topic	Description
measurement for your measure? For example, 81% of charts had documented reconciliation of medications in the discharge summary and medications on the patient discharge instructions.	
Please describe any other outcomes resulting from your NI project. Qualitative outcomes:	1. Identification of a potential larger issue of incoming residents not being as versed as we had perceived in the sterile field 2. Perceived increase confidence of residents 3. Perception among other staff and administration that GME was "serious" about contributing to improved quality and outcomes
Other important outcomes:	1. Improved ability to account for and track/audit training and education leading to "credentialing" of a procedure 2. Improved teamwork between nursing, GME and quality
Please describe any unintended consequences from your project. Positive unintended consequences:	Increased recognition of needing to teach and assess the "basics", i.e., sterile field, in physicians who were previously assumed as competent.
Negative unintended consequences:	Although we saw improvement in BSI in Q3, the Q4 rates increased. We need to find out why this occurred.
Your learning from designing and executing your NI project – briefly answer each of these questions: 1) What were the three greatest challenges you encountered?	• Training "continuing" residents – the interns and new residents were easy to group, train and assess • Reaching consensus on parameters – which programs should insert central lines, what kind of training (if any!) the upper level residents should receive, how many central lines should be supervised/approved before doing one independently • Collecting data in a reasonable time frame to be able to gauge whether or not your current efforts are having an impact
2) What were the three most important success factors?	• Positive attention from senior leadership – CEOs, Board of Directors, etc.. Meetings with the CEO as part of the NI were incredibly well

Topic	Description
	received and vital to the implementation and success of our project. • GME seen as a "contributor" to improved quality • All program directors being meaningfully on board – not just lip service to appease GME
3) Are there additional resources that you wish had been available for this project?	No
4) On a scale of 1 to 10, how much of what you set out to do in your project were you able to achieve by today?	1 2 3 4 5 6 7 **8** 9 10 Nothing Everything
5) Also on a scale of 1 to 10, how satisfied are you with what you were able to accomplish on your NI project?	1 2 3 4 5 6 7 **8** 9 10 Very Dissatisfied Very Satisfied
6) What single most important advice would you give to another leader embarking on a similar initiative?	Keep your project highly visible, transparent data (good, bad an ugly) and full accountability of all stakeholders. Keep it in front of your CEO and your Board of Directors. Make program directors accountable and keep them involved as key stakeholders.
Briefly describe any next steps on your NI project or any changes and initiatives that may have resulted from it in your organization.	We will continue to measure, tweak, and reassess our program. The faculty will all be trained under this same or similar program, and we are considering annual retraining of all house officers. Culturally as an organization, GME has increased stature and respect that we "get it" and we are aligning our goals with the institutions goals (vs. doing GME separate from hospital operations). This is an important factor that I cannot underscore enough.

NATIONAL INITIATIVE

Final Project Report Due

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Institution:　　　Monmouth Medical Center

Submitter:　　　Joseph Jaeger

Project Name:　　Case-Control Study of MRSA vs. MSSA in an Independent Academic Medical Center

Project Aim:　　Assess whether there are independent risk factors that distinguish MRSA from MSSA patients in a community-based teaching hospital.

Project Team Members (Names, Titles, Role in Institution)

Name	Title in Institution	Role in Project
J. Jaeger, MPH	Assoc. VP, Academic Affairs / DIO	Principal Investigator, Epidemiologist, Statistician
Allan Tunkel, MD	Chair, Internal Medicine	Faculty, Infectious Disease Specialist
Linda Pascarella, RN	Infectious Disease Coordinator	Hospital Infectious Disease expert, data oversight
Yuliya Nudelman, MD	Resident, Internal Medicine	Data tool development / chart abstraction
Dennis Farrell	Infectious Disease Staff	Subject Identification / software expert

National Initiative Final Project Report

Topic	Description
Project Name	Case-Control Study of MRSA vs. MSSA in an Independent Academic Medical Center
Project Location (e.g., specific clinic, room)	Tertiary care hospital (housewide- Monmouth Medical Center)
Which IHI initiative(s) does your project address?	MRSA infection reduction.
Description of the intervention you defined (e.g., sticking the Curel bottle on the table next to the charts)	Identifying risk factors for MRSA in the hospital setting, compared to MSSA patients (who often have a similar risk profile) in order to define an effective and efficient screening patients guideline.
Measure of observation (if more than one measure was used, list each)	Odds Ratios and 95% Confidence Intervals
Describe the measurement tool you developed (e.g., check-list)	Data sheet used to abstract medical record, including demographics, comorbid conditions, hospital admission-related variables.
Identify who used the tool to collect data (e.g., resident)	Internal Medicine resident (PGY-2)
What was the pre-intervention measurement for your measure (if available)? If you applied more than one measure, list the measurement for each.	Potential risk factors were identified from the published literature, and included (but is not limited to) such patient characteristics as age, living arrangements, reason for admission, previous hospitalizations, prior antibiotic use, and comorbidities.
What was the post-intervention measurement for your measure? For example, 81% of charts had documented reconciliation of medications in the discharge summary and medications on the patient discharge instructions.	Study is still ongoing, so risk factors have not yet been defined.
Please describe any other outcomes resulting from your NI project. Qualitative outcomes:	The resident is learning about the strengths and limitations of using retrospective data.

Topic	Description
<u>Other important outcomes</u>:	Raised awareness (along with concurrent initiatives) of hospital infection problem. Will provide clinically relevant teaching tool for use in resident education on epidemiology, infection control, performance improvement, scholarly activity, and the General Competencies.
Please describe any unintended consequences from your project. <u>Positive unintended consequences</u>:	Hospital staff not normally involved in "scholarly activity" appreciate being recognized as experts, and being involved in an academic pursuit.
<u>Negative unintended consequences</u>:	Pressure on inexperienced resident to produce; frustration due to a lack of institutional infrastructure and processes to run project efficiently.
Your learning from designing and executing your NI project – briefly answer each of these questions: 1) What were the three greatest challenges you encountered?	Incorporating the project into everyday clinical work (i.e., time needs to be carved out for project); concurrent institutional efforts, along with perception that this specific project was not "new territory," drew potential resources to somewhat 'competing' efforts; unavailable data (either incomplete or entirely missing chart)
2) What were the three most important success factors?	Interest and time of resident; concurrent institutional efforts / awareness of importance of topic.
3) Are there additional resources that you wish had been available for this project?	Data collection, coding, and entry personnel, as well as statistical analysis resources, would be of help.
4) On a scale of 1 to 10, how much of what you set out to do in your project were you able to achieve by today?	1 2 3 4 5 6 7 8 9 10 Nothing Everything
5) Also on a scale of 1 to 10, how satisfied are you with what you were able to accomplish on your NI project?	1 2 3 4 5 6 7 8 9 10 Very Dissatisfied Very Satisfied
6) What single most important advice would you give to another leader embarking on a similar initiative?	Including Performance Improvement / QA / QI personnel would ensure an institutional perspective, and perhaps provide much-needed resources.

Topic	Description
Briefly describe any next steps on your NI project or any changes and initiatives that may have resulted from it in your organization.	Next steps include completing data collection and analysis, presentation of the results, and developing a screening protocol that includes the risk factors identified in the project.

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Institution: Ochsner Medical Center – New Orleans

Submitter: Steven B. Deitelzweig M.D.

Project Name: Reducing Heart Failure Readmissions

Project Aim: To reduce all 30 day readmissions for patients to less than 12% (Initially was 16%)

Project Team Members (Names, Titles, Role in Institution)

Name	Title in Institution	Role in Project
Steven Deitelzweig , M.D.	**VPMA, Chairman of Hospital Medicine**	**Leader**
Bill Pinsky, M.D.	**Executive Vice President Medical Affairs, CAO**	**Leader**
Omar Shams, M.D.	**Internal medicine resident**	**Participant**
Andrew Schutzbank	**Medical student**	**Participant**
Mark French, MHA	**VP, Cardiology and Surgical Services**	**Participant**
Donna Saxton, MPH	**VP, Center for Quality Excellence**	**Participant**

Julie Lavigne, RN	**Coordinator, PI**	**Participant**

National Initiative Final Project Report

Topic	Description
Project Name	Reducing Heart Failure Readmissions
Project Location (e.g., specific clinic, room)	Ochsner Medical Center – New Orleans
Which IHI initiative(s) does your project address?	**Quality: Hand-offs** **Deliver reliable evidence-based care for congestive heart failure…… to reduce readmissions**
Description of the intervention you defined (e.g., sticking the Curel bottle on the table next to the charts)	Revising the patient education discharge materials. Formalizing the protocol for referring heart failure patients to the discharge clinic.
Measure of observation (if more than one measure was used, list each)	Created a patient flow model that clarified the best way to influence patient behavior while at home would be to focus on educating them before discharge, Ensure a prompt clinic appointment (less than 1 week), Create new patient education materials and a new clinic referral protocol Track 30 day re-admission rate for CHF
Describe the measurement tool you developed (e.g., check-list)	Number of patients with clinical characteristics referred to the heart failure clinic, 30 day readmission rate

Topic	Description
Identify who used the tool to collect data (e.g., resident)	Medical informatics, residents, medical student, performance improvement, medical administration
What was the pre-intervention measurement for your measure (if available)? If you applied more than one measure, list the measurement for each.	Number of patients referred to the heart failure clinic, 30 day readmission rate,
What was the post-intervention measurement for your measure? For example, 81% of charts had documented reconciliation of medications in the discharge summary and medications on the patient discharge instructions.	We created new patient education materials (handout and magnet) and a new clinic referral protocol. Since the release of the protocol, the number of patients referred to HF clinic increased 300%.
Please describe any other outcomes resulting from your NI project. Qualitative outcomes:	Use of VHA rapid adoption network (RAN) technique to improve of CHF core measure dataset We are considering the development of a telephone management system with phone scripts and enhance home care services, which will eventually be upgraded to Telecare services. This unit could provide space for IV Diuretics and Ultrafiltration for Acute HF exacerbations.
Other important outcomes:	See above plus multidisciplinary coordination.

Topic	Description
Please describe any unintended consequences from your project. Positive unintended consequences:	A Cardiology Fellow stationed within the Emergency Department has taken ownership of the CHF population.
Negative unintended consequences:	n/a
Your learning from designing and executing your NI project – briefly answer each of these questions: 1) What were the three greatest challenges you encountered?	1) The creation of a new clinic referral protocol to ensure that admitted patients would be seen promptly in the newly created HF discharge clinic. 2) Working with medical informatics to track CHF patients real-time to allow for a faster "check" of the performance of the entire HF system. 3) New grade appropriate patient education materials focusing on heart failure. 4) Nursing and medical staff commitment to this effort.
2) What were the three most important success factors?	1) Highlighting the urgency for managing this disease state better. 2) Interview after identifying <u>all</u> key stakeholders (including patients utilizing a patient centered philosophy). 3) The process of gathering and interpreting the data to accurately target our interventions.
3) Are there additional resources that you wish had been available for this project?	1) Use of telecare services which involves the use of scales and stethoscopes integrated with phone lines allowing monitoring of weights and heart sounds over the phone. 2) Creation of a heart failure observation unit in the emergency dept (space permitting).

Topic	Description
4) On a scale of 1 to 10, how much of what you set out to do in your project were you able to achieve by today?	1 2 3 4 5 6 **7** 8 9 10 Nothing Everything
5) Also on a scale of 1 to 10, how satisfied are you with what you were able to accomplish on your NI project?	1 2 3 4 5 **6** 7 8 9 10 Very Dissatisfied Very Satisfied
6) What single most important advice would you give to another leader embarking on a similar initiative?	Utilize a collaborative or team approach involving staff and resident physicians, nurses, case managers, social workers, dietary, informatics representing both inpatient and outpatient environment to fully allow for divergent discussion prior to selecting your approach and interventions. Use your best practice networks.
Briefly describe any next steps on your NI project or any changes and initiatives that may have resulted from it in your organization.	What has begun is only a component of a comprehensive disease management program. Much of the behavior that leads to HF readmissions occurs in the home, out of site of medical practitioners. The next step to implement this plan would be to develop a telephone management system, possibly utilizing or modifying the phone scripts. In addition, we will continually think about how best to appropriately utilize aquadex (ultrafiltration) devices and AIAMC's and VHA's rapid adoption network. Use interactive TV technology to better educate our patients about their disease.

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Institution: **Reading Hospital and Medical Center**

Submitter: **David George MD FACP, Associate Chair Medicine, Reading Hospital**

Project Name: Improving the Hand-off Process on General Medicine Teaching Service, Utilizing a Year-long "Learn-by-doing" Educational Curriculum.

Project Aim:

1. **100 % Compliance with written and verbal hand-offs (same time, same place, consistent format) within 6 months of implementation.**

2. **Create a process to assure sustainability and continuous improvement of hand-off process.**

Project Team Members (Names, Titles, Role in Institution)

Name	Title in Institution	Role in Project
Nimesh Dayal MD	**PGY-3 Internal Medicine Resident**	**Team Leader**
Rajesh Pradhan MD	**PGY-2 Internal Medicine Resident**	**Assistant Team Leader**
Matthew Sandusky MD	**PGY-1 Transitional Year Intern**	**Team Member**
Mary Fontanella MD	**PGY-1 Transitional Year Intern**	**Team Member**
David George MD	**IM Program Director**	**Facilitator**

| Karen Bielecki | Director, Quality Improvement | Consultant |

National Initiative Final Project Report

Topic	Description
Project Name	Improving the Hand-off Process on General Internal Medicine Teaching Service, Utilizing a Year-long "Learn-by-doing" Educational Curriculum
Project Location (e.g., specific clinic, room)	Inpatient General Medicine Teaching Service, Reading Hospital
Which IHI initiative(s) does your project address?	Improving Communication during Hand-off
Description of the intervention you defined (e.g., sticking the Curel bottle on the table next to the charts)	New standardized sign-out form created On-call rating form developed Specific time, place and process defined Process for ongoing improvement developed Incorporation of project into year-long "learn-by-doing" practice improvement education program
Measure of observation (if more than one measure was used, list each)	1a,b. Intern/resident satisfaction with sign out 2a. Utilization rate – standard sign out form 2b. Compliance rate- time, place, order 2c. Quality rating – "To Do" List by intern 2d. Quality rating – Quality/Efficiency of Sign out 3. Competence in QI process – demonstrates knowledge/skills

Describe the measurement tool you developed (e.g., check-list)	1a. Resident Survey (modified from VA questionnaire) – satisfaction
	
	1b. Intern On-call Rating Form (modified from Baystate)
	
	     i. calls where intern should but did not receive sign out
	
	     ii. calls to intern where sign out did not provide optimal information
	
	2. Check list
	
	2a. use of standard sign-out form
	
	2b. compliance with standard time, place, order
	
	2c. clarity of "To Do" list by intern (initially Likert scale, currently qualitative)

Topic	Description
	2d. presentation of key issues by upper year (initially Likert scale, currently qualitative) 3. Portfolio Review 3a. demonstration of knowledge and application of core practice improvement skills by intern) 3b. demonstration of knowledge and application of leadership skills by upper year resident)
Identify who used the tool to collect data (e.g., resident)	1a. PGY-3 resident practice improvement team leader (0, 6 months) 1b. Program director reviews forms completed by interns on call (quarterly) 2a-d. Chief resident or attending 3a,b. Each resident's mentor and internal medicine program director
What was the pre-intervention measurement for your measure (if available)? If you applied more than one measure, list the measurement for each.	1a. Satisfaction Survey System easy to use 2.7 (Likert scale 1-5) Quality of sign out 2.9 Patient safety 3.1 1b. Intern on-call rating form Report of 3/103 patients not signed out over 4 week period 2a. Standard sign out form utilization Utilization rate N/A Multiple sign out forms utilized 2b. Compliance rate – time, place Same time, place of sign out 33% 2c,d. See qualitative below 3. See qualitative below
What was the post-intervention measurement for your measure? For example, 81% of charts had documented reconciliation of medications in the discharge summary and medications on the patient discharge instructions.	1a. Satisfaction Survey - System easy to use 3.8 (p< 0.001) Quality of sign out 3.5 (p= 0.004) Patient safety 4.0 (p= 0.001) 1b. Intern on-call rating form

Topic	Description
	Report of 0/107 (p = 0.12) patients not signed out over most recent 4 week period
	2a. Standard sign out form utilization
	Utilization rate 100% (last 2 quarterly reviews)
	2b. Compliance rate – time, place
	Same time, place of sign out >80% (reviewed quarterly)
	2c,d. See qualitative below
	3. See qualitative below
Please describe any other outcomes resulting from your NI project. Qualitative outcomes:	1b. Intern on-call rating forms (quarterly review)– Information received from interns on perceived deficiencies in quality of previous day's sign-out has been collated and utilized for training purposes. Merit of providing this specific feedback is preliminarily positive, but observation to assess impact continues. 2. Quality of sign out : Likert scale measures were abandoned in the assessment of intern "To Do" list review and upper year resident's presentation of key issues. A qualitative approach is in process. 2c. Intern "To Do" List (quarterly review) – Review has served to provide individual feedback to interns, resulting in interns providing more specific information on hand-off forms 2d. Upper year resident presentation of key issues (quarterly review) – Heterogeneity was observed and a process to improve this communication skill is being developed. 3. Portfolio: 3a. Interns demonstrated ability to perform evidence-based review, and developed an understanding of aim statements, measures for change, and PDSA cycles. 3b. Upper years demonstrated an understanding of team dynamics, skills in defining strengths of team members and delegating tasks, as well as maintaining interest and momentum for the project.
Other important outcomes:	-Residents developed an appreciation of the value of utilizing multiple PDSA cycles in order to make progressive improvements in the sign out process. -Based upon portfolio review, residents developed a greater appreciation of

Topic	Description
	the value of developing skills in practice improvement -This project was one of 6 team projects created by residents as part of a year long "learn by doing" curriculum. The program was in its second year at the time of this project. The program appears to provide residents with incremental knowledge and skills in the area of practice improvement, a positive perception of such interventions, and measurable improvements in processes of care. There is broad support for continuation of the current educational model at our institution.
Please describe any unintended consequences from your project. Positive unintended consequences:	- Residents discovered that a number of "missed patients" on sign out occurred when upper year resident provided care for a patient (admission, transfer, follow-up) without help of an intern. Adding responsibility for upper year to complete the intern's sign out sheet on such patients appears to have addressed most of the previously noted "missed patient" problems.
Negative unintended consequences:	- Residents were initially frustrated that we could not readily develop an electronic hand-off form, in which many fields were automatically populated. This required some early discussion about the challenges faced by administrative leaders in prioritizing various projects.
Your learning from designing and executing your NI project – briefly answer each of these questions: 1) What were the three greatest challenges you encountered?	1. Other IT priorities at the institution have delayed our ability to create a form that automatically populates various fields. 2. There is always a challenge helping residents stay on task, without assuming control of the project. 3. The inability to discover or develop better objective measures for quality of hand-offs limited our ability to validate our improvement project.
2) What were the three most important success factors?	1. The project integrated nicely into the current curriculum for teaching practice improvement to residents. 2. Residents also recognized this problem as an issue, so they readily chose to assume the project.
3) Are there additional resources that you wish had been available for this project?	1. Practice improvement coordinator to provide support functions to the team 2. IT consultant 3. Someone to input collected data

Topic	Description
4) On a scale of 1 to 10, how much of what you set out to do in your project were you able to achieve by today?	9
5) Also on a scale of 1 to 10, how satisfied are you with what you were able to accomplish on your NI project?	7
6) What single most important advice would you give to another leader embarking on a similar initiative?	Year long resident team QI projects are feasible in small programs such as ours. They can produce positive resident competency outcomes and measurable improvements in processes of care.
Briefly describe any next steps on your NI project or any changes and initiatives that may have resulted from it in your organization.	-Our current hand-off forms are "lean" because we do not have the IT functions which automatically populate various fields. We have recently provided all of our Internal Medicine and Transitional Year residents with notebook sized computers. They can access patient information readily at any site in the hospital. We will be observing the impact of this intervention on the method by which interns and residents review patient information when they are on call. This might influence the format of future hand off forms.

-We are exploring the use of "content omissions" described recently by Horwitz (Horwitz L, et al. Consequences of inadequate sign-out for patient care. Archives Int Med 2008;168:1755-1760) to better categorize hand-off deficiencies and provide more objective evaluation and feedback during quarterly observation of intern and upper year sign out.

-The year-long team QI training project for residents, within which the hand off project was introduced, enters its 3rd year. The program has been viewed very positively by our Hospital's Administrative leadership and our QI leadership. Our Obstetrics/Gynecology residents have joined the program this year. In addition, greater collaboration is occurring between these teams and our QI Department and QI is offering greater resources to support the program. The faculty are also developing greater skills in the area of cost/benefit analyses.

- Our institution has created a regular publication that is transmitted to regional physicians, which highlights latest developments in Medicine and at our institution. A regular segment of this publication will focus on GME led quality/safety projects. |

NATIONAL INITIATIVE

Final Project Report

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Institution: _____**Riverside Methodist Hospital, Columbus, Ohio**_____

Submitter: _____**Jennifer L. Beard, MD, Asst program Director IM Residency**

Project Name: _____**Assessing the Impact of MRSA Screening Surveillance in an Intensive Care Unit Setting**_____

Project Aim: _____**Reduce MRSA Hospital-Acquired Infection Rate in a Tertiary Care Hospital**

Project Team Members (Names, Titles, Role in Institution)

Name	Title in Institution	Role in Project
Jennifer L. Beard, MD	Asst Program Director, IM Residency	Project leader
Simi Bhullar, MD	Critical Care Medicine Faculty	Intensive Care Unit/ GME project support
Victoria Ruff, MD	Critical Care Medicine Faculty	Intensive Care Unit/ GME project support
Joseph Gastaldo, MD	Infectious Disease Faculty	Antibiotic Stewardship
Richard Bakker, MD Kimberly Fong, DO	IM residents (PGY 2 & PGY 1)	Project support, data collection

Jo Henman, RN	Infection Control specialist	Project support
Amy Imm, MD	VP Quality and Safety	Project support/ Administration
Pamela Boyers, PhD	DIO	GME Leadership

National Initiative Final Project Report

Topic	Description
Project Name	Assessing the Impact of MRSA Screening Surveillance in an Intensive Care Unit Setting
Project Location (e.g., specific clinic, room)	Intensive care unit (32-bed) of tertiary care hospital
Which IHI initiative(s) does your project address?	MRSA infection reduction
Description of the intervention you defined (e.g., sticking the Curel bottle on the table next to the charts)	Screening all patient admissions to ICU w/ nasal MRSA PCR, preemptive contact isolation for all admissions, monitoring of hand hygiene/ contact isolation protocol compliance
Measure of observation (if more than one measure was used, list each)	Rate of nasal MRSA PCR + on admission (carrier rate) Rate of ICU HAI MRSA rate (basal/ post-implementation) Rate of total hospital (whole-house) HAI MRSA rate (basal/ post-implementation) Compliance with Infection Control contact isolation policy/ hand hygiene (basal/ post-implementation)
Describe the measurement tool you developed (e.g., check-list)	Checklist of compliance w/ hand hygiene/ contact isolation policy

Topic	Description
Identify who used the tool to collect data (e.g., resident)	Residents/ eICU nurses/ Infection Control specialists
What was the pre-intervention measurement for your measure (if available)? If you applied more than one measure, list the measurement for each.	Basal ICU MRSA HAI rate Basal hospital-wide MRSA HAI rate Basal hand hygiene compliance
What was the post-intervention measurement for your measure? For example, 81% of charts had documented reconciliation of medications in the discharge summary and medications on the patient discharge instructions.	Unavailable at this time, project underway
Please describe any other outcomes resulting from your NI project. Qualitative outcomes:	Project not complete at this time. One outcome to date has been recognizing that GME in our institution is not part of the explicit strategic plan of the Safety/ Quality department initiatives.
Other important outcomes:	Application for national grant to support this project (pending notification at this time).
Please describe any unintended	Interest in house staff in looking at projects that they can be engaged in to

Topic	Description
consequences from your project. <u>Positive unintended consequences</u>:	develop experience in research or quality improvement, which many had not considered prior to this.
<u>Negative unintended consequences</u>:	
Your learning from designing and executing your NI project – briefly answer each of these questions: 1) What were the three greatest challenges you encountered?	• Engagement from infectious disease physicians b/c of varying evidence supporting MRSA screening • I anticipate that consistency among the nursing/ medical staff for following the hand hygiene/ contact isolation protocols will be variable and challenging—baseline results support this • Lack of time
2) What were the three most important success factors?	• Engagement of key personnel supporting the project • Development of a project timeline and following it • Education of the "boots-on-ground" staff/ personnel to understand the implications of the project and why it matters to them
3) Are there additional resources that you wish had been available for this project?	More time (always a limitation)—mainly for education of our residents/ house staff on the impact of safety and quality in the hospital environment, but also in their future careers.

Topic	Description
4) On a scale of 1 to 10, how much of what you set out to do in your project were you able to achieve by today?	1 2 3 4 5 6 7 8 9 10 Nothing X Everything
5) Also on a scale of 1 to 10, how satisfied are you with what you were able to accomplish on your NI project?	1 2 3 4 5 6 7 8 9 10 Very Dissatisfied X Very Satisfied
6) What single most important advice would you give to another leader embarking on a similar initiative?	Engagement from key personnel involved in all steps of project is essential to success: administration, GME leadership, quality department, infection control, ICU, antibiotic stewardship, eICU, pharmacy, environmental services, and laboratory. Without this, the project will not develop any legs to move.
Briefly describe any next steps on your NI project or any changes and initiatives that may have resulted from it in your organization.	Follow through to completion of project and determine if this will be stepping stone for implementation of MRSA screening in additional units in hospital or system-wide

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__Institution:__   *__Saint Francis Hospital and Medical Center__*

__Submitter:__   *__Mary Inguanti, Vice President of Operations and Quality, Chief Quality Officer__*

__Project Name__: *__GME meets IHI: Implementation of the Institute for Healthcare Improvement's Central Line Bundle at Saint Francis Hospital and Medical Center through Resident Involvement__*
Breaking Down the Barriers: Medical Resident Comfort Level with Central Venous Catheter Site Selection

__Project Aim:__   *__To facilitate medical resident compliance with the five components of the Institute for Healthcare Improvement's Central Line Bundle through assessment of training needs, provision of resources, and education to enhance their comfort and skill in initial line placement, while also encouraging safe care decisions regarding the ongoing need for central access.__*

Project Team Members (Names, Titles, Role in Institution)

Name	Title in Institution	Role in Project
Mary Inguanti	**VP, Operations and Quality**	**Sponsor and team lead**
Rolf Knoll, MD	**Senior VP, Chief Medical Officer**	**Sponsor**
Varalakshmi Venkatachalam, MD	**Hospitalist**	**Physician Champion**
David Neville	**Infection Control Coordinator**	**Educator and Content Provider**
Kathy Sandelli	**Infection Control Practitioner**	**Educator and Content Provider**
Lauren Tiberio	**Administrative Fellow**	**Project Manager**

National Initiative

Final Project Report

National Initiative Final Project Report

Topic	Description
Project Name	GME meets IHI: Implementation of the Institute for Healthcare Improvement's Central Line Bundle at Saint Francis Hospital and Medical Center through Resident Involvement
Project Location (e.g., specific clinic, room)	All units within Saint Francis Hospital and Medical Center where central lines are initially inserted. The checklist is presently being used in the CICU.
Which IHI initiative(s) does your project address?	The Central Line Bundle 1. Hand Hygiene 2. Maximal Barrier Precautions upon Insertion 3. Chlorhexidine Skin Antisepsis 4. Optimal Catheter Site Selection with the subclavian vein as the preferred site. 5. Daily Review of Line Necessity with Prompt Removal of Unnecessary Lines
Description of the intervention you defined (e.g., sticking the Curel bottle on the table next to the charts)	1. Investment in technology: purchased SonoSite® MicroMaxx® ultrasound machines to assist with line placement in the subclavian vein. 2. Re-designed central venous catheter insertion kit used by residents, physician assistants and physicians to insert central lines. The changes to the kit include adding a larger sterile drape, 2 sterile gowns, 2 masks, 2 caps, a StatLock® catheter stabilization device and our custom checklist. The kits were received on 8/15/08. 3. Inserviced physicians, physician assistants and nurses on the new custom CVC kits. 4. Revised central venous catheter insertion kit checklist to include reason for femoral insertion if femoral vein used. The checklist is included in our customized kit to increase compliance. The completed checklists are being reviewed by the CICU physician leadership and then are sent to Infection Control Department for

Topic	Description
	trending and analysis. 5. Conducted resident-specific educational presentation on the Institute for Healthcare Improvement's Central Line Bundle and its importance from a patient safety and infection prevention perspective.
Measure of observation (if more than one measure was used, list each)	1. *Comfort level* was measured using a survey. 2. *Compliance* with 4 of 5 Central Line Bundle points is being measured using the central venous catheter insertion checklist. The checklist does not capture data regarding the daily review of the necessity of the central line.
Describe the measurement tool you developed (e.g., check-list)	1. *Comfort level survey* assessed medical residents' comfort level, using a 5 point Likert scale, for all three anatomical catheter insertion sites. The survey additionally captured the reason for a resident's discomfort with, or fear of, inserting a central line in a particular location. 2. *Central venous catheter insertion checklist* was revised and is included in the central venous catheter insertion kit to ensure compliance with four of the five bundle components. The checklist does not capture data regarding the daily review of the necessity of central lines.
Identify who used the tool to collect data (e.g., resident)	1. The project team surveyed medical residents in all post-graduate years at 3 different hospitals affiliated with the Internal Medicine residency program. 2. The checklist is used by anyone on the team inserting a central line, typically the RN present for insertion will actually complete the form. 3. After review, completed checklists are returned to the Infection Control Department for use in data analysis and trending.
What was the pre-intervention measurement for your measure (if available)? If you applied more than one measure, list the measurement for each.	1. Anecdotal evidence at our institution indicated that medical and surgical residents opted for the femoral approach for catheter insertion most often. 2. Ongoing surveillance of line-related bacteremia rates.

Topic	Description
	3. It was also widely known that a checklist instituted several years prior was only being used sporadically and subsequently, not being submitted to Infection Control for trending and analysis.
What was the post-intervention measurement for your measure? For example, 81% of charts had documented reconciliation of medications in the discharge summary and medications on the patient discharge instructions.	1. Central Line-related bacteremia rates 2. Post-intervention survey of medical residents to assess whether comfort level in placing central lines in the subclavian location increased (to be completed).
Please describe any other outcomes resulting from your NI project. Qualitative outcomes:	1. A greater understanding by the medical residents of the 5 components of the Central Line Bundle and an increased awareness of its great importance to our institution from a patient safety perspective. 2. Improved attitude of residents regarding the importance of reviewing and tracking line necessity daily.
Other important outcomes:	1. Enhanced multidisciplinary collaboration regarding the central line insertion process with discussion by Saint Francis Hospital and Medical Center administrative leaders about the future formation of a Central Line Team comprised of a medical resident, surgical physician assistant and nurse. Additionally, there was a hospital-wide recognition of the essential role of the nurse as a part of the line insertion team.
Please describe any unintended consequences from your project. Positive unintended consequences:	1. A positive, yet unintentional consequence was an increased confidence level in the residents' skill in placing a central line in the recommended anatomical location. It was also noted that the residents felt a greater sense of self-assurance in knowing that they had placed the central line in the safest location for the patient.
Negative unintended consequences:	None noted.
Your learning from designing and	1. Initially, our lack of an available and involved physician

Topic	Description
executing your NI project – briefly answer each of these questions: 1) What were the three greatest challenges you encountered?	champion to spearhead the project. 2. The need for technological support to assist with central line placement in the subclavian vein. 3. The infrastructure of our medical resident program created a great challenge in that Saint Francis Hospital and Medical Center is part of a consortium with the University of Connecticut School of Medicine Internal Medicine residency program. The medical residents rotate through three large area hospitals which posed a challenge in the execution of the data collection, education and training.
2) What were the three most important success factors?	1. Chief Executive Officer/President support, in addition to financial and operational support 2. Resident and medical staff engagement and support. 3. Our physician champion is employed at Saint Francis Hospital and Medical Center as an academic hospitalist.
Are there additional resources that you wish had been available for this project?	1. More direct contact with the medical residents. 2. An on-site simulation center for line insertion education and ultrasound training. 3. Improved methods to track both the number of line insertions and central line days. 4. The ability to track central lines through our clinical information system.
On a scale of 1 to 10, how much of what you set out to do in your project were you able to achieve by today?	1 2 3 4 5 6 7 8 9 10 Nothing Everything
Also on a scale of 1 to 10, how satisfied are you with what you were able to accomplish on your NI project?	1 2 3 4 5 6 7 8 9 10 Very Dissatisfied Very Satisfied

Topic	Description
What single most important advice would you give to another leader embarking on a similar initiative?	1. Maintain a current pulse on organizational culture and understand the potential for operational barriers when implementing a new initiative. 2. Before dedicating resources, attract and maintain a physician champion and engage senior leadership.
Briefly describe any next steps on your NI project or any changes and initiatives that may have resulted from it in your organization.	1. Continue in-services with those physicians, residents and physician assistants who have not been trained on the SonoSite® MicroMaxx® ultrasound machine, purchased to assist with subclavian line insertion. 2. Begin work on development of a tool or method to address the daily review of line necessity to mitigate the risk of leaving a central line in a patient longer than necessary. 3. Expand use of the checklist to encompass all areas in the hospital that insert central lines. 4. Measurement of patients' satisfaction and pain level associated with central venous catheter insertion and subsequent use of this data to enhance the medical resident training model through further technique modification.

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Institution: **Scottsdale Healthcare**

Submitter: **Roxana Cham, MD, Charles Mantey, MD; M. Moe Bell, MD (for update)**

Project Name: **Utilization of Electronic Medical Records to Improve Communication between Admitting and Primary Care Physician at Time of Discharge**

Project Aim: **Develop and use a discharge template that could be completed by the admitting physician and sent electronically to the primary care physician that would improve the handoff of a patient at the time of hospital discharge**

Project Team Members (Names, Titles, Role in Institution)

Name	Title in Institution	Role in Project
James Burke, MD	Chief Medical Officer, Senior Vice President	Executive sponsor, project leadership
Michael Foley, MD	Chief Academic Officer	Executive sponsor, project leadership
M. Moe Bell, MD	Associate Director, Family Medicine Residency	Project leader and oversight of resident coordination
Charles Mantey, MD	Family Medicine Resident	Project coordinator, resident champion
Roxana Cham, MD	Family Medicine Resident	Project coordinator, resident champion

National Initiative Final Project Report 9/2/2008

Topic	Description
Project Name	Utilization of Electronic Medical Records to Improve Communication between Admitting and Primary Care Physician at Time of Discharge
Project Location (e.g., specific clinic, room)	Scottsdale Healthcare Osborn hospital and Scottsdale Healthcare Family Medicine Residency clinic
Which IHI initiative(s) does your project address?	Handoffs
Description of the intervention you defined (e.g., sticking the Curel bottle on the table next to the charts)	Create and implement use of an EMR-based discharge template to facilitate handoff of Family Medicine patients when discharged from the hospital
Measure of observation (if more than one measure was used, list each)	1. Adoption of use of discharge template 2. Readmission rates to hospital
Describe the measurement tool you developed (e.g., check-list)	Reports run on NextGen EMR of discharge template use. Readmission data from quality department of hospital.
Identify who used the tool to collect data (e.g., resident)	Family Medicine Faculty
What was the pre-intervention measurement for your measure (if available)? If you applied more than one measure, list the measurement for each.	Not available at this time
What was the post-intervention measurement for your measure? For example, 81% of charts had documented reconciliation of medications in the discharge summary and medications on the patient discharge instructions.	Readmission rates not available at this time. Discharge template has been used to facilitate handoff on 36 patients. Use is ongoing, but variable among residents. Percent of use not available.

Topic	Description
Please describe any other outcomes resulting from your NI project. Qualitative outcomes:	Residents got involved in a hospital quality initiative and spearheaded use of the discharge template.
Other important outcomes:	Discharge template was developed and implemented.
Please describe any unintended consequences from your project. Positive unintended consequences:	A new second year resident has expressed interest in continuing this project, including training and education of new residents in the process.
Negative unintended consequences:	Just as project was being implemented, the key resident participants graduated. New resident leaders need to be found to carry on.
Your learning from designing and executing your NI project – briefly answer each of these questions: 1) What were the three greatest challenges you encountered?	Getting residents to adopt the new discharge process Obtaining readmission rates Continuing project upon graduation of Drs. Cham and Mantey
2) What were the three most important success factors?	An adaptable and available Electronic Medical Record Good resident leadership All those deadlines to keep things moving forward
3) Are there additional resources that you wish had been available for this project?	No
4) On a scale of 1 to 10, how much of what you set out to do in your project were you able to achieve	1 2 3 4 5 **6** 7 8 9 10 Nothing Everything

Topic	Description
by today?	
5) Also on a scale of 1 to 10, how satisfied are you with what you were able to accomplish on your NI project?	1 2 3 4 5 6 7 **8** 9 10 Very Dissatisfied Very Satisfied
6) What single most important advice would you give to another leader embarking on a similar initiative?	Thoroughly evaluate the current system in place in order to create an intervention that will not only make an impact but also be easy to integrate. This will assure that the intervention will be utilized after the completion of the project.
Briefly describe any next steps on your NI project or any changes and initiatives that may have resulted from it in your organization.	Improving physician communication is an integral part of the handoff portion of hospital discharges. Using a task system with the EMR, we hope to reduce readmissions and improve patient care. We anticipate that the EMR will provide many other opportunities for process improvement projects for both the residency clinic and the hospital system. Meanwhile, we need to actively train new residents in optimal use of the discharge template, and to monitor its use. An additional benefit from participation in the NI is that residents and faculty will be much more involved with quality in the hospital through membership on the QRM committee.

National Initiative Final Project Report – Project Summary

Introduction:

Congestive heart failure (CHF) is associated with a high rate of re-hospitalization, especially within the 30-day period immediately following discharge. While many factors contribute to this, our initial focus was to improve the handoff portion at the time of discharge for patients with CHF. The handoff primarily includes discharge orders, physician communication, and the first follow up visit. In order to focus on one area to improve, we began by evaluating our system and patient population.

Scottsdale Healthcare is comprised of 3 community hospitals including Osborn, Shea, and Thompson Peak. Scottsdale Osborn is a 300-bed hospital located in south Scottsdale, and near Tempe, Phoenix,

and the Pima Indian Reservation. The admitting physicians are a combination of full time hospitalists, family practice residents, and primary care physicians. Currently, nursing notes, dictated notes, labs, and imaging are available on a portal system, but the majority of physician notes and orders are paper-based. Within the next 5 years, we anticipate a system-wide electronic medical record (EMR).

One family medicine residency program is based at Scottsdale Healthcare, comprised of 24 residents and 6 full-time faculty. The clinic is located near the Scottsdale Osborn hospital, and an inpatient teaching service including 2 senior residents, 2 interns, and 2 faculty admit clinic patients as well as unassigned patients from the emergency department. NextGen EMR went live in the clinic in June 2007. Remote access is available from any computer, which allows the inpatient teaching service access to outpatient medical records on any clinic patient who is admitted.

Pre-intervention evaluation:

With the assistance of case management, a database of patients who were admitted over the last 4 months was compiled. This was separated into two groups: patients admitted to all services and patients admitted to only the family practice inpatient teaching service. Each main area of the handoff was then addressed including discharge orders, follow up visits, and physician communication.

Discharge orders

Based on CMS guidelines, Scottsdale Healthcare was already satisfactory in providing an assessment of left ventricular function, angiotensin converting enzyme inhibitors, aspirin, smoking cessation information and discharge instructions. However, one area of concern is medication reconciliation. The most frequent violation was a discrepancy on the discharge summary with the medication list provided to the patient. A task force has already been formed by case management and nursing to evaluate this specific concern. Although this does present an important part of the handoff, it does not appear to have a direct effect on the number or re-hospitalizations since the discharge summary rarely is sent to the primary care physician. It is also expected that with the addition of EMR system wide in the future, this problem will be resolved.

Follow-up

The first follow-up visit after discharge plays an integral part in the handoff since this provides a setting for medication adjustments and further patient education. From the initial evaluation of patients readmitted with CHF, we found a lack of consistent follow up despite discharge orders instructing follow-up within 1 week of discharge. Lack of follow-up seems to be most directly associated with the re-hospitalization rate, however this relies almost solely on patient responsibility. The patient population at the Scottsdale Osborn hospital varies greatly but there are obvious barriers with uninsured and undocumented patients.

Although a designated CHF clinic could improve patient outcomes, this is not cost-effective in our hospital model.

Physician Communication

The last piece of the handoff that we studied focused on physician communication. With the relatively recent advent of hospitalists, there is a lack of communication between the admitting physician and the primary care physician. The current system of communication relies mostly on a dictated discharge summary. Unfortunately, it is rarely seen by the primary care physician by the first follow-up visit, if at all. This results in difficulty making medication adjustments, following up on inpatient studies, and arranging follow up with consultants.   With the addition of EMR to the outpatient residency clinic, we have found that inter-office communication has inherently improved. We feel this provides an opportunity to use EMR to not only improve inter-office communication but also communication with the inpatient teaching service.

Methodology

The outpatient residency clinic is currently using the EMR system NextGen. This particular system was chosen for many reasons but particularly to interface with the EMR system that Scottsdale Healthcare will eventually use system wide. We anticipate that the residency program will therefore be able to act as a pilot program for the hospital system in many ways.

In addition to recording patient encounters in the electronic chart, the NextGen system also records telephone calls, inter-office communication, and uses other templates which can be customized. Sending information within the office is done by creating a task. At least once a day, each physician checks their inbox and addresses each task. Since creating and sending tasks is a very simple and common action within the system, we felt that an intervention utilizing this action would be easily received.

Based on this information, we decided to study whether sending a task from the admitting physician to the primary care physician with information including dates of admission, diagnoses, major interventions, discharge medications, pending studies, and follow-up would decrease the number of re-hospitalizations within a 30 day period and improve communication as perceived by the primary care physician.

As a trial, we chose an already existing template within a telephone call template that could be easily accessed and sent by any resident.   It provided space to describe the admission briefly and any medication changes, pending studies and follow-up visits scheduled. A sample was created and copies and an explanation of the project were given to the current residents on the inpatient teaching service. Since communication is not only a concern in the setting of CHF admissions, we decided to encourage the use of the template for all discharges of clinic patients. This would also provide more data and opportunities to identify barriers within a shorter amount of time.

We discovered early on that certain areas of this template offered little space especially with medication changes therefore it was proposed to the residency program director that a new template be created specifically for discharges. This template offered more space and flexibility and when tasked to a primary care physician is titled as "discharge" instead of "telephone call" which assists with triage of tasks. See figure 1.

Outcomes:

Ultimately, we have several outcomes that we would like to measure. At this time, the project is still in the early stages of collecting data and overcoming initial barriers. We plan to measure the percentage of discharge tasks received of all the clinic patients admitted, re-hospitalization rates over a 30-day period as compared to pre-intervention rates, and overall satisfaction of the new physician communication method.

To measure percentage of discharge tasks received, we will use copies of the inpatient teaching service daily census that includes the names of primary care physicians. We will then be able to search the EMR system to find any sent discharge tasks. With the assistance of case management we will again be able to compile a database to quantify re-hospitalization rates post-intervention. Finally, a survey will be made to identify any additional barriers not already identified and assess overall satisfaction with the new discharge communication.

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Institution: **St. Luke's Hospital and Health Network**

Submitter: **John V. Pamula, MD**

Joel C. Rosenfeld MD, MEd

Project Name: **Quality Improvement of a High Priority Area – Implementation of Effective Patient Hand-offs in an Internal Medicine Residency**

Project Aim: **1) Develop standardized process for hand-offs on the Internal Medicine teaching services**

2) Provide resident education on effective oral and written hand-offs

3) Subjective and objective assessment of oral and written hand-offs

4) Develop an evaluation tool and on-going monitoring process

Project Team Members (Names, Titles, Role in Institution)

Name	Title in Institution	Role in Project
John V. Pamula, MD	Senior resident in Internal Medicine	Principal investigator
Gloria Fioravanti, DO, FACP	Program Director in Internal Medicine	Supervisor and project guide

National Initiative Final Project Report

Topic	Description
Project Name	Quality Improvement of a High Priority Area – Implementation of Effective Patient Hand-offs in an Internal Medicine Residency
Project Location (e.g., specific clinic, room)	Internal Medicine Department – in-patient teaching services St. Luke's Hospital and Health Network, Bethlehem, PA 18015
Which IHI initiative(s) does your project address?	Improvement in communication resulting in increased patient safety
Description of the intervention you defined (e.g., sticking the Curel bottle on the table next to the charts)	1) Educational seminar to all Internal Medicine residents on patient hand-offs based on JCAHO guidelines 2) Orientation of new PGY1 residents by a teaching module 3) Orientation of senior residents to mentor and monitor effective hand-offs 4) Development of a standardized written hand-off form incorporating critical events, labs, code status and a severity index
Measure of observation (if more than one measure was used, list each)	1) Survey of resident satisfaction pre and post intervention 2) Objective assessment of communication of critical events, critical events, labs, and code status 3) Standardize time, place, and presentation of patient data
Describe the measurement tool you developed (e.g., check-list)	1. Subjective assessment by questionnaire. 2. Objective assessment by identifying critical events, labs, and code status in both oral and written hand-offs 3. Severity index for patient rounds prioritization 4. Evaluation form for PGY1 hand-offs by senior residents 5. Compliance with standardized time, place, and presentation
Identify who used the tool to collect data (e.g., resident)	Internal Medicine senior residents

Topic	Description
What was the pre-intervention measurement for your measure (if available)? If you applied more than one measure, list the measurement for each.	1) Obtained survey of residents' satisfaction of present hand-offs (65%) 2) Obtained data of communication of patients' critical events, critical labs, and code status (68%) 3) Observations of residents' compliance with standard time, place, and presentation for hand-offs
What was the post-intervention measurement for your measure? For example, 81% of charts had documented reconciliation of medications in the discharge summary and medications on the patient discharge instructions.	1) Post intervention resident satisfaction of effective hand-offs (90%) 2) Post intervention communication of critical data (82%) 3) Post intervention increased compliance with standard time, place, and presentation
Please describe any other outcomes resulting from your NI project. Qualitative outcomes:	1) Standardization and streamlining of hand-offs process 2) Improved accuracy of critical data communication
Other important outcomes:	
Please describe any unintended consequences from your project. Positive unintended consequences:	Subjective increased overall satisfaction of PGY1 residents (recipients of hand-offs) taking night call
Negative unintended consequences:	None
Your learning from designing and executing your NI project – briefly answer each of these questions: 1) What were the three greatest challenges you encountered?	1) Difficulty in disseminating pertinent patient data when patient census is high 2) New PGY1 residents initially were overwhelmed in first 2 weeks, but with orientation and with senior resident guidance developed confidence and competence in terms of hand-offs process 3) Incompatibility of software in importing patient data to written hand-

Topic	Description
	off form
2) What were the three most important success factors?	1) Orientation of senior residents and their active participation in mentoring 2) Orientation of residents 3) Close monitoring by faculty
3) Are there additional resources that you wish had been available for this project?	Better compatibility of software
4) On a scale of 1 to 10, how much of what you set out to do in your project were you able to achieve by today?	10 All objectives designed for the project were completed
5) Also on a scale of 1 to 10, how satisfied are you with what you were able to accomplish on your NI project?	10 All senior residents, PGY1 residents, and the faculty expressed high levels of satisfaction with the new hand-offs process
6) What single most important advice would you give to another leader embarking on a similar initiative?	1) Hand-offs need to be tailored to the specific specialty 2) Involve IT early in the process
Briefly describe any next steps on your NI project or any changes and initiatives that may have resulted from it in your organization.	1) On-going monitoring of hand-offs by faculty 2) Development of electronic hand-off form for use by all specialties 3) Extension of hand-offs training to other residencies 4) Implementation of hand-offs system to Hospitalist service

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Institution: **Virginia Mason Medical Center**

Submitter: Brian Owens, MD

Project Name: Graduate Medical Education Patient Safety Initiative:
Resident-to-Resident Clinical Communication Handoff

Project Aim: Use of a standardized template and didactic presentations about communication expectations to improve the content and reliability of Resident-to-Resident Handoff communication when responsibility for clinical coverage changes.

Project Team Members (Names, Titles, Role in Institution)

Name	Title in Institution	Role in Project
Brian Owens, MD	Director Graduate Medical Education (GME)	Executive Sponsor Lead
Lynne Chafetz	Senior Vice President for GME	Executive Sponsor
Alvin Calderon, MD	Program Director- Internal Medicine	Physician Champion, Internal Medicine
Joe Panerio-Langer, MD	Internal Medicine Resident	Resident Champion, Internal Medicine
Robert Gould, MD	Internal Medicine Resident	Resident Lead, Internal Medicine
Rosemary Tempel, RN	Quality & Patient Safety Project Manager	Project Manager
Richard Thirlby, MD	Program Director- General Surgery	Physician Champion, General Surgery
Richard Koehler, MD	General and Thoracic Surgeon	Physician Champion, General Surgery
Beejay Feliciano, MD	General Surgery Resident	Resident Lead, General Surgery
Sarah Levasseur, MD	General Surgery Resident	Resident Lead, General Surgery
Clancy Clark, MD	General Surgery Resident	Resident Lead, General Surgery
Keith Dipboye, MD	Clinical Information System (CIS) liaison	CIS Development Champion

National Initiative Final Project Report

Topic	Description
Project Name	Graduate Medical Education Patient Safety Initiative: *Resident-to-Resident Clinical Communication Handoff*
Project Location	Virginia Mason Medical Center VM Medical Hospitalist and General Surgical services
Which IHI initiative(s) does your project address?	**Clinical Handoffs; Communication failures / patient safety**
Description of the intervention you defined	- Created a template to define handoff content by service in SBAR format - Developed a Standard Process for Handoff of clinical information - Clarified coverage for all surgical services covered by residents during on-call time periods. - Measured subjective effectiveness / satisfaction with handoffs
Measure of observation (if more than one measure was used, list each)	- Standard work for Medicine & Surgical services - Compliance with SBAR format - Resident Handoff Coverage - 1:1 patient / handoff - Efficiency / reliability of Handoff information when coverage needed.

Describe the measurement tool you developed (e.g., check-list)	<u>Standardized Template</u> (word – Medicine / excel -Surgical) with specific column headers of expected handoff elements:
	      1) Patient Demographics (**S**ituation);
	      2) Problems / Diagnosis (**B**ackground);
	      3) Plan of Care (**A**ssessment); and
	      4) Specific On-Call To Do Tasks (**R**ecommendation). - Residents type entries into each field of template. - Project Manager evaluates completeness of information provided on template.

Identify who used the tool to collect data (e.g., resident)	- Night float Resident / Interns – utilize tools, provided feedback - Project Manager - abstractor
What was the pre-intervention measurement for your measure	- Self-developed templates – content baseline judged using same SBAR expectations. - Resident feedback of satisfaction / anecdotal case reports.

What was the post-intervention measurement for your measure?	<u>Medicine Team</u>
	Measurement was obtained on a **random collection** of sheets returned after on-call shift. **Total of 955 handoffs were audited from June 07 – Sept. 08.** - BUNDLE compliance increased from **78 - 81% at Baseline (pre-intervention); to 90 - 95% post-Training / post-Orientation.** - Satisfaction by receiving Resident of handoff templates achieved **95%.** - The Resident Communication Handoff Bundle is an all-or-none measure including each of the element below: Aug-Sept '08 Results
	  Pt Demographics/Info (**S**ituation) 100 %
	  Problems / Diagnosis (**B**ackground) 100 %
	  Plan of Care (**A**ssessment) 95 %
	  Specific On-Call To Do Tasks (**R**ecommendation) 100 % <u>General Surgery Team</u>
	Measurement was obtained on a random collection of handoffs sheets 9/2 – 9/4/08 and 9/8-9/11/08 from night float Resident. **Total of 321 template handoffs were collected and reviewed.** - BUNDLE (SBAR/template) compliance averaged **92%**. MD Contact information and Allergies were most frequently missing or incorrect. - Satisfaction by receiving (night float) Resident achieved **95%**.

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Please describe any other outcomes resulting from your NI project. Qualitative outcomes:	• Didactic training on handoff content and expectations for all internal medicine and general surgery residents • Standard work tools • Computerized progress note and handoff template development / testing Resident / Intern Feedback
Other important outcomes:	• Visible linkage between graduate medical education (GME) and organizational / corporate patient safety initiatives; Resident-to-Resident Handoff patient safety project lead by GME • Improved interpersonal communication competency • Improved critical thinking by more fully describing the patient's status • Profile of resident involvement in patient safety initiatives and learning in an article for an organizational marketing publication
Please describe any unintended consequences from your project. Positive unintended consequences:	Forced discussion during daytime rounds of anticipated nighttime complications and greatest potential patient safety risk(s).
Negative unintended consequences:	Time commitment for already busy residents: injecting non-patient care related improvement work into workday.
Your learning from designing and executing your NI project – briefly answer each of these questions: 1) What were the three greatest challenges you encountered?	• Data collection / auditing - Busy residents juggling multiple responsibilities had a difficult time remembering to document on handoff template and to drop off forms or give actionable feedback to resident leaders and project manager. • Team transitions - Re-teaching each month; incremental learning curve • Teaching - when is the best time/place to teach
2) What were the three most important success factors?	▪ Project Manager pushing project / team forward, clarifying the goals and providing outside perspective. ▪ Active leadership / engagement by residents –a) interacting with Intern/Night float for regular feedback, b) reviewing / collecting data sheets, c) recording process steps and handoff expectations (didactic program), and d) developing the standardize templates. • Workplace transition (spread) – Handoff project incorporated into team rounds - working together to address individual patient problems (on a daily basis) or weekly/monthly (if getting off track); building anticipatory handoff issues & tasks during rounds (goals and follow-up).
3) Are there additional resources that you wish had been available for this project?	More residents/faculty on-board during ward rounds. The source of the most important information for effective handoff and data collection comes from a team approach.
4) On a scale of 1 to 10, how much of what you set out to do in your project were you able to achieve by today?	1 2 3 **4** 5 6 7 8 9 10 Nothing Everything
5) Also on a scale of 1 to 10, how satisfied are you with what you were able to accomplish on your NI project?	1 2 3 4 5 6 7 **8** 9 10 Very Dissatisfied Very Satisfied

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6) What single most important advice would you give to another leader embarking on a similar initiative?	A team is essential with the following traits / roles: ▪ Scope, data management, timeline, and product driver – use a Project Manager ▪ Active participation / leadership by resident leaders (*Process Owner; i.e., let the people affected do the improvement work*) ▪ Effective sponsorship—removes barriers; do not impose solutions. ▪ Maintain communication/feedback with those closest to work (Intern/Resident) • Creativity, innovation, and persistence – to embed NEW standard processes/tools (the improvement) into daily work
Briefly describe any next steps on your NI project or any changes and initiatives that may have resulted from it in your organization.	▪ Data analysis (handoff tools & survey) & trending results ▪ Refinement and teaching Didactic presentation to new resident staff. (orientation) ▪ Incorporate Handoff template content into Electronic Medical Record to increase efficiency and improve accuracy of information. • Continue to define coverage policy and expectations on services without Resident involvement who handoff to Resident coverage for non-normal duty hours.

NATIONAL INITIATIVE
Final Project Report

This final report of your project will be compiled with those of other participating institutions to form a key component of the final report of the National Initiative. This report will be distributed to Alliance members and to external audiences. Members are at different points in this journey so the objective is NOT to compare one NI participant to another but instead to provide guidance to others who are starting this journey or want to accelerate their activities. Please be concise since we are looking for "Abstract" level of detail.

Institution: **York Hospital**

Submitter: **Ronald Benenson**

Project Name: Resident Hand-Off Communication

Project Aim: **Improve hand-off communication through education of hand-off skills and use of a structured format**

Project Team Members (Names, Titles, Role in Institution)

Name	Title in Institution	Role in Project
Jessica Starner MD	Family Medicine Resident	Education of residents, formatting Sign-Out Plus program, survey of residents, conducting research project
Allene Gagliano MD	Family Medicine Resident	Education of residents, formatting Sign-Out Plus, survey of residents, conducting research project
Ronald Benenson MD	Emergency Physician	Facilitator, education & support
David Emrhein MA MEd	Administrative Director – Medical Education	Facilitator, education & support

National Initiative Final Project Report

Topic	Description
Project Name	Resident Hand-Off Communication
Project Location (e.g., specific clinic, room)	York Hospital Family Medicine Residency
Which IHI initiative(s) does your project address?	**Hand-offs**
Description of the intervention you defined (e.g., sticking the Curel bottle on the table next to the charts)	Educational session on hand-off skills conducted July 2008. Development & refinement of structured hand-off tool (web-based)
Measure of observation (if more than one measure was used, list each)	1) Pre-implementation survey of Family Medicine resident on hand-off communications 2) Data collection Evaluation of hand-off communication for calls regarding patients on night float shifts (in process) 3) Post-implementation survey of hand-off system (to be completed)
Describe the measurement tool you developed (e.g., check-list)	1. Pre-implementation survey – a questionnaire on the quality of hand-offs in the family Medicine residency, Completed by FM Residents. Items included: Level of training Items you include in hand-offs Items you receive in hand-offs From hand-offs, do you have an understanding of patients needs/status? From hand-offs, do you know what problems to anticipate? Have you ever had difficulty managing a patient due to an inadequate hand-off? Should nurses have access to your hand-off information? 2. Hand-off Evaluation – Residents on night float complete a log of each phone call from nursing floors concerning patients. The log includes a description of the phone call and a set of four questions for each call. There is a space for actions taken and comments that might include suggestions the

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	resident would have for improvement. Questions include: Was the issue/problem/concern discussed during sign-out? Should the issue have been discussed during sign-out? Did you feel adequately prepared to handle the issue based on sign-out? Could the call have been avoided if the nurse had access to sign-out? 3. Post-implementation survey – the questionnaire on the quality of hand-offs will be repeated.
Identify who used the tool to collect data (e.g., resident)	The survey was conducted by two of the Family Medicine residents, Dr. Starner & Dr. Gagliano.
What was the pre-intervention measurement for your measure (if available)? If you applied more than one measure, list the measurement for each.	The percent of the time the following information was "always" received at hand-offs: Code status 33% Vital signs 46% Studies completed 13% Studies pending 46% Patient needs (to-do list) 66% Patient plan (therapy, studies, discharge plans) 53% 80% of the residents reported at least one episode of difficulty managing a patient due to an inadequate hand-off.
What was the post-intervention measurement for your measure? For example, 81% of charts had documented reconciliation of medications in the discharge summary and medications on the patient discharge instructions.	Pending completion
Please describe any other outcomes resulting from your NI project. Qualitative outcomes:	All residencies in the hospital are using Sign-Out Plus for hand-off communication. Emergency Medicine residency is developing a format for hand-off information.

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<u>Other important outcomes</u>:	
Please describe any unintended consequences from your project. <u>Positive unintended consequences</u>:	Resident involvement in quality improvement was presented to the Hospital President and support obtained. QI issues have been presented to the Residency Directors at Education Committee on several occasions. QI has been recognized as a long-term goal for inclusion in residents' activities. Education Committee has supported bringing Dr. Doris Quinn to discuss the "The Matrix" at a multi-residency Grand Rounds - Spring 2009. The leader of the health system's quality management has attended Education Committee and will support involvement of residents and residencies in quality management projects. Residency faculty will be sent to a quality management education series that will enable them to lead quality improvement initiatives.
<u>Negative unintended consequences</u>:	While working on resident hand-offs, I found that at least 2 other groups in the health system are working on hand-off skills. Some times there is not an effective way for people to communicate outside their silos.
Your learning from designing and executing your NI project – briefly answer each of these questions: 1) What were the three greatest challenges you encountered?	Getting Residency Directors to take some ownership of the project/initiative in their programs. Keeping busy residents on track with the initiative. The Family medicine chief resident for the 2008-2009 academic years has been busy with other personal and residency issues. One has to find a way to incorporate the initiative in then normal flow of residency activities. Getting buy-in from the Education Committee. Progress has been slow, the foot is in the door and we're moving in the right direction. For example, I lobbied for education for all new residents on communication skills, including hand-offs, during their orientation this past July. This did not happen.
2) What were the three most important success factors?	Residents that recognized the project was important for patient care and were willing to put in extra time to implement the education and hand-off tool. Support from the Senior Vice-President for Quality Management and the Director of quality management. Finding new ways to get residents involved in patient care issues that will give them opportunities for QI and research projects that will be supported.

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3) Are there additional resources that you wish had been available for this project?	We did have support from IT for modification of the hand-off tool and were able to make it residency specific. For the Family Medicine project, I should have enlisted a Family Medicine Faculty member to be a co-investigator. I do not have a regular interface with the FM Residency.
4) On a scale of 1 to 10, how much of what you set out to do in your project were you able to achieve by today?	7/10
5) Also on a scale of 1 to 10, how satisfied are you with what you were able to accomplish on your NI project?	7/10
6) What single most important advice would you give to another leader embarking on a similar initiative?	Obtain support from Residency Directors and Administration. Educate them on the importance of resident involvement in QI activities for good patient care, maturation of the resident's lifelong skills, and meeting ACGME core competency requirements. And keep it simple.
Briefly describe any next steps on your NI project or any changes and initiatives that may have resulted from it in your organization.	With the help of Quality Management, begin to involve residencies in projects on a regular basis. The health system has Clinical Effectiveness Teams that for various clinical issues, such as Congestive Heart failure, Diabetes, etc. I would like to see resident involvement on these committees. The CETs should provide a rich environment for QI and research projects. For example, three residents have joined the Pneumonia CET. One will be looking at de-escalation of antibiotics for HCAP patients.

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Improving Patient Care through GME: A National Initiative of Independent Academic Medical Centers

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