

Shannon Bell MD, Sheilah Bernard MD, Andrew Camerato BA, Robert Canelli MD, Pamela Corey MS RN, Elena Cotto BA, Janet Crimlisk MS RN, Ron Iverson MD, Lynne Lambert MS RN, Ron Medzon MD, Mark Norris MD, Steven Poole, Frank Schembri MD, Kristine Smith Rn BSN

BACKGROUND

- **Define Problem/ Reason for action:**
 - Inpatient Maternity services moved from Menino to Yawkey building in Jan. 2016. This move had impact on emergency team response for cardiac arrest. The new unit was on one floor with an unfamiliar floorplan in a building that was not a typical code blue response area.
 - The average hospital wide code blue calls for the entire institution was under 10 per month, making this a low volume, high acuity situation. Maternal code blues occurred at an even lower volume.
 - In situ simulation based education has been shown to provide opportunities for staff to practice low volume, high acuity situations in their workplace. In situ simulations also assist in identifying process and system issues in real time.
 - American Heart Association (AHA) 2015 statement on cardiac arrest in pregnancy stated: "There should be one call to action that activates the maternal cardiac arrest team, notifies all members, and ensures that specialized equipment is brought to scene without delay".
- **Provide baseline performance data:**
 - Declining number of code blues at BMC related to implementation of Rapid Response Teams (RRT) and earlier detection of worsening patient clinical status.
- **Define project scope:**
 - A series of 2-hour in situ sessions on the new unit focusing on a maternal cardiac arrest scenario to provide both maternal care team and internal medicine code team responders with ability to practice code blue response in the new maternity setting

AIM

- **Measurable goals:**
 - Response time of adult code blue team: Way finding and access to the new unit
 - Identification of each team member's role and responsibilities
 - Clarification of maternal code blue response at our institution
- **Objectives:**
 - Testing systems for new maternal inpatient space in Yawkey building
 - Provide continued support of OB-GYN department team training goals
 - Prove viability of an ongoing in situ simulation training program
- **Project outcome metrics:**
 - Improve maternal cardiac arrest response by decreasing arrival time of adult code blue team, allowing maternal team to respond to specific maternal code blue roles of perimortem delivery to improve maternal and fetal outcomes.

METHODS

- **Describe methods:**
 - Curriculum design that includes maternal cardiac arrest for an in situ team training simulation.
 - Program to be 2 hours in length, offered twice a month on 1st Wednesday of the month in the evening and 3rd Monday of the month in the morning
 - Participants to include all members of responding teams
 - OB- MDs, Family medicine, CNM (nurse midwives), RNs, Anesthesia, OR scrub
 - Code Blue-Internal Medicine MDs, Anesthesia, Resource RN, ICU RN, Respiratory Therapy, Pharmacy, Transport, Security, OSNM/NM, Social Work, and materials management
 - Simulation to be followed by comprehensive team debriefing lead by trained facilitators from OB, Internal Medicine, and Nursing
 - Debriefing to include discussion of the following aspects of situation and response
 - Notification process-paging clarification, response route, access
 - Medical care and algorithm
 - Maternal cardiac arrest interventions
 - Crisis Resource Management principles- communication, leadership, roles, and resource usage
 - Identification of trends, performance gaps, and participant process suggestions that arise from simulation observation and debriefing discussion with interdisciplinary participants
 - Facilitators to document for each session:
 - Page response/ overhead response
 - Team member arrival times
 - Time to identification of the ACLS algorithm
 - Time to implementation of appropriate interventions
 - Gaps identified from scenario observation and debriefing discussion
 - All data identified to be shared with all program designers to revise the curriculum for the next session to further test gaps and solutions

ISSUES & SOLUTIONS

- **An explanation of the changes made to achieve improvement in the targeted process**
- **Clarity of paging: Misleading pages**
 - Confusion on exact location-old location building part of initial pages misdirecting staff to wrong unit
 - Telecom to set up code page with building, but Yawkey was not a choice available- this was added to the paging tree
 - Multiple units now on one level (L&D, OR/PACU, Triage, 2 Mother-Baby wings, Nursery, NICU)
 - Nomenclature for calling a code blue on Yawkey 4 developed Building (Yawkey), floor (4), area (L&D), room number (1)
- **Responding teams: Who responds and what are their roles?**
 - AHA statement for inclusion of all team members- add response groups to code page
 - include OB team- group pager #147147
 - Include NICU delivery resuscitation team- group pager #423423
 - Use of on unit greeter to assist in direction to correct location
- **Roles and Responsibilities: What is the role of each responder, who leads the code?**
 - Table developed to outline each responders roles and responsibility (see table)
- **Special considerations for a maternal code: per AHA statement**
 - Development of role and responsibility table and visual aid for code cards (see below, "Maternal Cardiac Arrest Reminders")
 - Development of Maternal Code Blue Policy (all pregnant patients no matter where located in the hospital)
- **Maternal Perimortem Cesarean Delivery (PMCD) and timely arrival of the emergent Cesarean kit in setting maternal cardiac arrest: identified delays of kit arrival during in situ sim**
 - Scrub tech added to pager # 147147 to bring scalpel, betadine and kit to code setting

MATERNAL CARDIAC ARREST REMINDERS!

1. Document TIME CODE WAS CALLED.
2. Pull bed away from the wall.
3. Put BACKBOARD from code cart under patient before compressions. MOVE THE UTERUS to the patient's LEFT to relieve aortocaval compression.
4. Give 100% oxygen by face mask. Start IV above the diaphragm.
5. REMOVE INTERNAL AND EXTERNAL FETAL MONITORS prior to defibrillating.
6. If no return of spontaneous circulation by 4 minutes, perform emergent C-section. DON'T MOVE TO OR and CONTINUE CPR DURING C-SECTION. Goal to delivery baby in 1 minute.
7. Use current ACLS drugs at recommended doses. Use epinephrine over vasopressin. If patient on magnesium before arrest, STOP MAGNESIUM and consider IV calcium gluconate (30 mL in 10% solution) or IV calcium chloride (10 mL in 10% solution).



RESULTS

- **Summary of performance results**
- There have been 9 sessions since January with 113 participants
 - All trainings were truly multidisciplinary: if entire team not able to be present, or the in situ area had no space, the session was canceled
- Debriefing discussions identified process and system issues leading to policy changes
 - Clarification of maternal code blue paging and addition of Yawkey to code blue response tree
 - During last simulation in September, the correct pages were made both overhead and on pagers as a result of naming system and Telecom changes
 - New Maternal Code Blue Policy 03.37.00k added to Policies & Procedures page on BMC Intranet in August of 2016
 - Addition of perimortem Cesarean kit delivery process to Maternity workflow
 - **Maternal Code Blue Role and Responsibility Grid (below)**

Person	Role	Notes
OB Nursing		
OB Primary Nurse	Calling for help, verbal hand-off to responding provider	-
OB Nurse Second Responder	Scribe and Timekeeper	-
Additional OB Nurses	Chest compressions, 1 person should perform left uterine displacement	Left Uterine Displacement
Scrub Tech	Bring betadine sponges, scalpel, emergent C-section kit to room	If scrub tech in OR - this task falls to the charge nurse
OB Providers		
OB Anesthesia Attending	Code Leader until Code Team arrives, Code Whisperer	-
OB Anesthesia Resident	Airway Management, IV/ Meds	-
OB Attending	Perimortem Cesarean	-
OB Resident	Second responder, Perimortem Cesarean	-
CNM attending, FM attending, Additional Residents	Chest compressions, 1 person should perform left uterine displacement (see graphic above)	-
Nursing Leadership		
OB Charge Nurse	Circulating/ Supplies (bringing Code Cart)	Where Necessary
OB Nurse Leadership	Crowd Control/ Bed Management	Where Necessary
NICU		
NICU Delivery Resuscitation Team- #423423 pager - NICU nurses/residents/ attending	Ready for neonatal resuscitation if perimortem Cesarean performed	-
Medical Code Team		
Medical Resident - Code Leader	Hand-Off, Code Leader	-
Medical Resident #2	Code Whisperer	-
Medical Intern	Patient Assessment	-
Medical Consult	Procedures	-
Code Nurse ICU	Meds/ Procedures / Defib	-
Code Nurse ICU	Meds/ Procedures / Defib	-
Code Nurse Resource	Meds/ Procedures /Defib	-
Respiratory Therapy	Airway Support	Scenario dependent
Respiratory Therapy	Airway Support/ Equipment	Scenario dependent
Code Anesthesia	Anesthesia Support	Scenario dependent
Code Anesthesia	Anesthesia Support	Scenario dependent
Ancillary Services		
Materials Management	Disposables/ Equipment	Outside of Room
OB Social Work	Family Support	Where Necessary
Transport	Labs/Equipment	Outside of Room
Public Safety	Crowd Control	Outside of Room

CONCLUSIONS

- **Lessons learned**
 - Implementation of an in situ simulation team training highlighted system and process gaps that needed to be addressed to improve the low volume, high acuity maternal cardiac arrest response.
 - Analysis of the identified gaps and implementation of systems improvements culminated in the development of a new Maternal Code Blue policy that addressed the unique needs of this patient population based on recommendations from the 2015 AHA guidelines for cardiac arrest in pregnancy
 - In situ simulation was instrumental in identifying performance gaps related to the move of a specialty unit to an area of the hospital new to inpatients

Summary of findings

- Moving a complex unit such as maternal services to a new location required in situ simulations to assess the overall functioning of the emergency response teams, both internally and hospital wide.
- The move required institution of new processes and implementation of new hospital wide policy and increased awareness of cardiac arrests in this specific patient population

Project Summary

- **This process was successful in identifying issues that may have compromised patient safety and will be useful as BMC continues with the redesign and patient unit moves during the addition to the inpatient units**

NEXT STEPS

Plan for sustainment

- Continue with the twice monthly in situ sessions, cycling in staff who have not yet participated- goal of 100% participation over 12-18 months
- Monitoring of all Maternal codes for implementation of process changes or identification of other issues that develop

Description of additional work to be completed

- Dovetail the in situ simulations with other quality improvement projects in the OB-GYN department
 - OB Hemorrhage project- starting in fall of 2016
 - Incorporate OB quality and patient safety metrics
 - Increase OB staff faculty comfort with facilitation of simulation

Plan for spread

- Expansion of in situ code blue training in other new units prior to and after location moves for system testing and performance gap identification. The interdisciplinary nature of the Solomont Simulation Center clinical leadership supports this goal.

BACKGROUND

- Massachusetts is currently experiencing an opiate epidemic
 - 1,531 Massachusetts residents died of opiate overdose in 2015.
 - A 41% increase over cases in 2013 (n=918).
- Over-prescription of opiates by physicians may be contributing to this epidemic
 - 70.3% of opiates used in non-medical purposes are obtained from a friend or relative (Jones, Paulozzi, Mack 2014)
 - 4 out of 5 current heroin users report that their opioid use began with prescription opiate analgesics (Muhuri, Gfroerer, Davies 2013)

AIM

- To examine the incidence of opiate over-prescription after inpatient surgery at Boston Medical Center

METHODS

- Retrospective chart review of 13,661 BMC patients
 - Inclusion Criteria:
 - Had Inpatient surgery from 5/24/2014 to 6/30/2016
 - Hospital stay > 24 hours
 - Discharged home
 - Exclusion Criteria:
 - Any patient not discharged by 6/30/16 (5 patients).
 - Any patient who received patient controlled anesthesia (PCA) (3,013 patients).
- Over-prescription was defined as being prescribed opiates despite not requiring any opiate medications for the past 24 hours prior to discharge

OPIATE USE AFTER SURGERY

- 8,607 patients underwent surgery requiring an inpatient admission greater than 24 hours
- 27% of patients did not require any opiate medications in the last 24 hours prior to discharge
- Patients who were able to get off narcotics were able to stop requiring narcotics ~2.5 days after surgery
- These patients tended to be:
 - Older
 - Male
 - Have longer admissions
 - Undergo shorter surgeries
 - Have less blood loss

Demographics	Length of Stay > 24 hrs	Off narcotics within 24 hours prior to discharge	On narcotics within 24 hours prior to discharge
Number of Patients	8,607	2,341	6,412
Number of Admissions	9,595	2,592	7,003
Number of Surgeries (5/24/14 - 6/30/16)	9,611	2,595	7,016
Age "Mean (Min-Max)"	43.8 (0 - 97)	46.7 (0 - 97)	42.8 (0 - 97)
Percent Males	0.40	0.44	0.38
BMI "Mean (Min-Max)"	29.5 (9.8 - 80)	27.6 (9.8 - 80)	30.2 (11.8 - 79.6)
Length of Stay (days)	5 (1 - 302.4)	6.9 (1 - 302.4)	4.4 (1 - 86.8)
Length of Procedure (mins)	3.8 (0 - 294.4)	5.1 (0 - 294.4)	3.2 (0.1 - 83)
EBL (mL)	95 (1 - 788)	79 (1 - 765)	101 (1 - 788)
Opiate Consumption and Prescription			
Number of Admissions	9,595	2,592	7,003
Number patients discharged home on opiates	7,116	1,071	6,045
Mean opiates taken in 24 hours prior to discharge (mg oxycodone)	28	0	38
Mean opiates on Discharge (mg oxycodone)	289	133	347
Total opiates on discharge (mg oxycodone)	2,772,931	346,013	2,426,918
Mean time of last opiate from closure (days)	2.9	2.5	3.0
Mean time of last opiate from discharge (days)	-1.0	-4.0	-0.3

REFERENCES

- Jones CM, Paulozzi LJ, Mack KA. 2014. Sources of prescription opioid pain relievers by frequency of past-year nonmedical use: United states, 2008-2011. JAMA Internal Medicine 174(5):802-3.
- Muhuri PK, Gfroerer JC, Davies MC. 2013. Associations of nonmedical pain reliever use and initiation of heroin use in the united states. CBHSQ Data Review :1-17.

OVER-PRESCRIPTION ON DISCHARGE

- 41% of patients off opiates by time of discharge were prescribed opiates
- Over-prescription accounted for for 12% of all narcotics prescribed to post-operative patients
- Services with the lowest rate of patients getting off narcotics had the highest rate of over-prescription

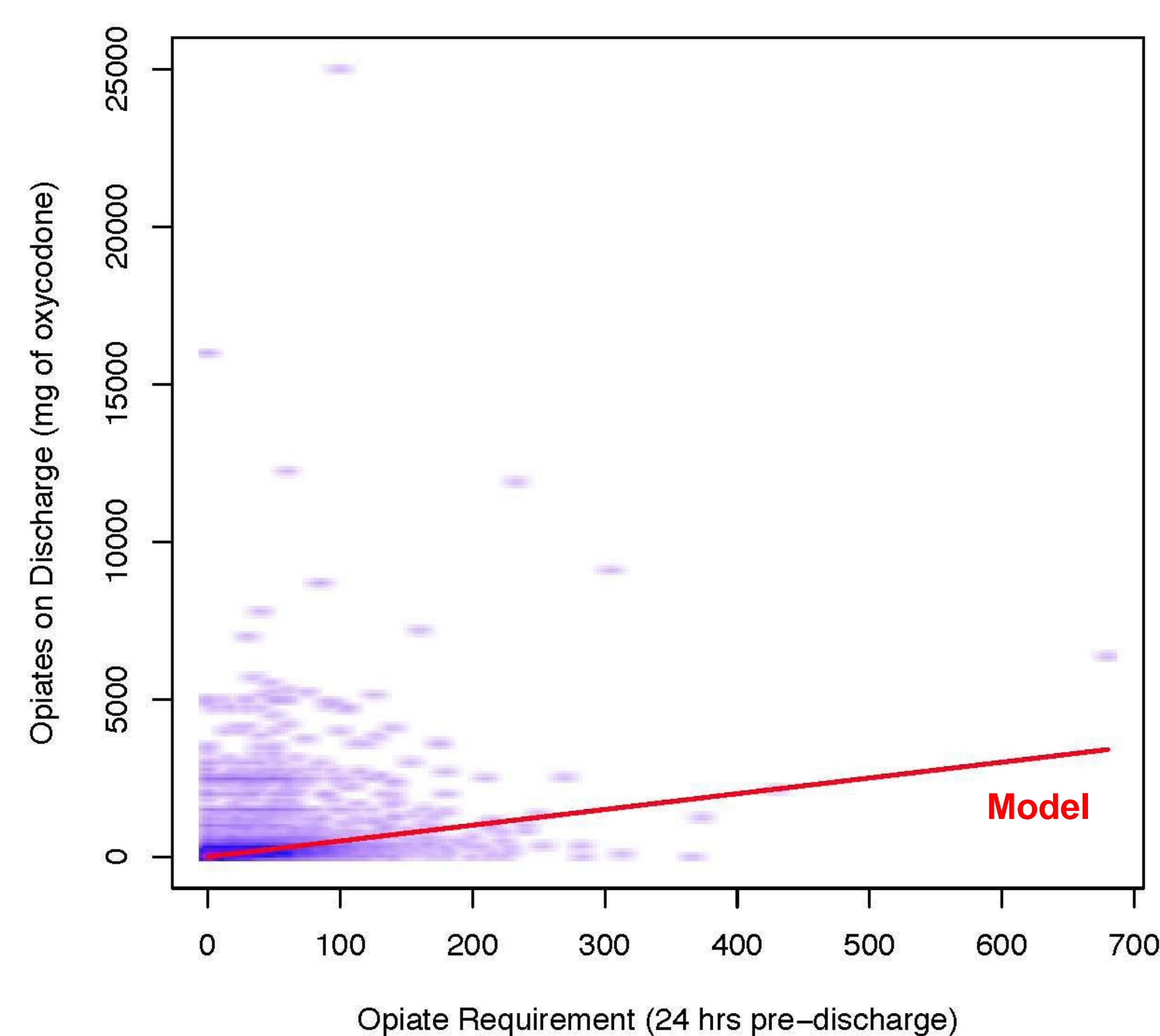
Percent patients off narcotics by 24 hours prior to discharge (2,341 / 8,607)	Percent patients off narcotics, but discharged on narcotics (1,071 / 2,592)	Percent total narcotics overprescribed (346,013/ 2,772,931)
27%	41%	12%

Service	Length of Stay > 24 hours	No narcotics within 24 hours prior to discharge	Percent off narcotics by 24 hours prior to discharge	Off narcotics AND discharged with opiates (OVERPRESCRIBED)	Percent off narcotics, discharged with narcotics (OVERPRESCRIBED)
Anesthesiology	201	118	59%	2	2%
Anesthesiology - EP Lab	3	2	67%	0	0%
Anesthesiology - Neuro IR	2	0	--	0	--
Anesthesiology - Pedi Sedation MRI	0	0	--	0	--
Cardiac	299	118	39%	53	45%
Gastroenterology	337	215	64%	13	6%
General	1,705	403	24%	208	52%
Gynecology	586	136	23%	95	70%
Maxillofacial Oral	740	99	13%	66	67%
Neurology	1	0	--	0	--
Neurosurgery	618	188	30%	42	22%
Obstetrics	1,819	365	20%	277	76%
Ophthalmology	30	16	53%	1	6%
Orthopedics	1,160	134	12%	77	57%
Otolaryngology	659	272	41%	82	30%
Pediatrics	105	81	77%	0	0%
Plastics	64	12	19%	7	58%
Podiatry	233	100	43%	21	21%
Thoracic	186	77	41%	23	30%
Transplant	96	43	45%	9	21%
Trauma	0	0	--	0	--
Urology	486	120	25%	61	51%
Vascular	281	96	34%	34	35%
Total	9,611	2,595		1,071	41%

SOLUTIONS

- Create a model that standardizes the amount of opiates prescribed at discharge given the amount consumed prior to discharge
- For example, we tested a model that prescribes a 5-day supply of narcotics based on the amount of narcotics taken in the last 24 hours prior to discharge.
- This model could eliminate over-prescription and reduce narcotics prescribed by 52%

Opiate Prescription versus Model	Off narcotics within 24 hours prior to discharge	Length of Stay > 24 hours
Total opiates on discharge (mg oxycodone)	346,013	2,772,931
Model Simulation (mg oxycodone)	0	1,322,196



CONCLUSIONS

- Over-prescription of opiates after surgery occurs regularly at BMC
- A simple model could eliminate over-prescription and standardize narcotic prescription

NEXT STEPS

- Implement a EMR-based protocol to recommend opiate prescription at discharge
- Track opiate prescription and determine if the protocol is able to reduce over-prescription

BACKGROUND

CANCER CARE SERVICES AT BMC

- Provide comprehensive, multi-specialty team-based care for a wide range of cancer types
- Recipient of American College of Surgeons' Commission on Cancer Accreditation for comprehensive cancer center
- Continuously review care outcomes and patient satisfaction to improve quality
- Readmissions may lead to reduced quality of life and quality of death

ADVANCED CARE PLANNING (ACP)

- ACP is an important component of person centered care
- ACP improves alignment of care with patient wishes and reduces intensive treatments and hospitalizations at the end of life, results in earlier and increased referrals to hospice care, increases patient and family quality of life and satisfaction with care.

PRELIMINARY STUDY

January -June 2014 a retrospective chart review of all readmitted patients from the hematology and Oncology service at BMC in a 6 month period

Mortality rate within 1 year of discharge: 32.8% (non-elective readmissions) 19/58

- Mean days to death from readmission discharge: 65 days (range 0-252)
- 84.2% of those who died had metastatic cancer in index admission
- Only 37% ever had a palliative care consult placed (all on readmit)
- Only 17% had a documented EOL discussion on index admission
- 38.5% of patients had lung CA (22% of all non-elective readmissions)

ADVANCED CARE PLANNING (ACP) AT BMC

	Index Admission		First Readmission	
	Non-elective n=58	Elective n=10	Non-elective n=58	Elective n=10
Metastatic CA*	53%	30%		
DNR/DNI	21%	10%	33%	10%
Palliative Care Consult	12%	0%	21%	0%
End of Life Discussion	17%	10%	33%	10%
Health Care Proxy	67%	80%	74%	90%
Spiritual Consult	12%	0%		

AIM

- Identify characteristics of patients who are readmitted to the oncology service
- To standardize the trigger for Palliative Care Consults and ACP discussions (administration of a novel Severity of Illness (SOI) tool on all admitted oncology patients).
- To determine if the addition of earlier ACP discussions and palliative care improves specific patient outcomes?
 - Quality of life/death (measured through reported patient experience, and access to support services)
 - Readmissions rate

METHODS

- A novel Severity of Illness (SOI) tool was created by the interdisciplinary team
- ACP discussions and/or palliative care consults were indicated within 72 hours for those who score 4 or greater on the tool.
- Hematology-oncology providers were educated about the intervention during grand rounds, at team meetings and during huddles on the unit.
- All patients admitted to the hematology-oncology service from January 4, 2016 through June 30, 2016 were scored during daily interdisciplinary rounds.
- Retrospective chart reviews determined whether the proposed interventions were completed and documented.
- BMC providers created a new ACP documentation template in the electronic health record.
- Mortality outcomes of study participants will be followed for 1 year post-completion of the study

SOLUTIONS: SEVERITY OF ILLNESS TOOL (SOI)

Date: _____ Inpt attending: _____ Resident: _____ Outpt/primary oncologist: _____

DIAGNOSIS: _____

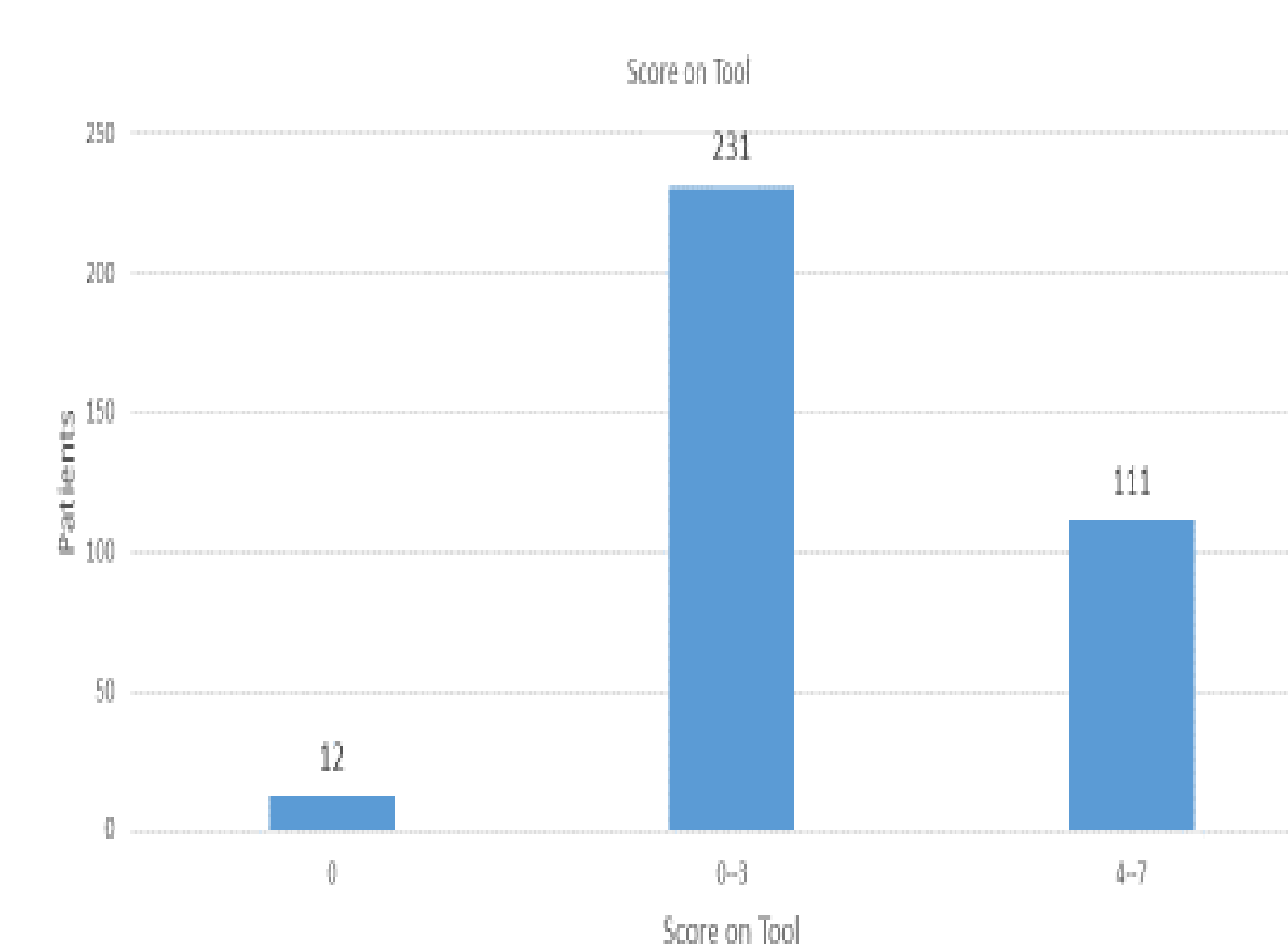
Place MRN sticker
Patient's Name: _____
Date of Birth: _____

Cancer Stage	Symptoms	Functional Status	
<input type="checkbox"/> Metastatic (2 points)	<input type="checkbox"/> Shortness of Breath at Rest (2 points)	<input type="checkbox"/> Recent Functional Decline in the last 2 months (1 point)	
OR	<input type="checkbox"/> Gastrointestinal: BMI < or = to 18.5 or unintended weight loss > 10% of TBW in the past 6 months (2 points)	<input type="checkbox"/> Dependent for ADLs (1 point)	
<input type="checkbox"/> Refractory Hematologic Malignancy (2 points)	<input type="checkbox"/> Pain: Reported or taking Opioid medications (1 point)		
	<input type="checkbox"/> Anxiety/Psychosocial Distress: Reported or observed (1 point)		
Points: _____	Points: _____	Points: _____	TOTAL POINTS: _____
<input type="checkbox"/> For score > or = to 4, please consult Palliative care. OR <input type="checkbox"/> If Palliative care deferred, please arrange Advance Care Planning meeting within 72 hours.			
Notes: _____			

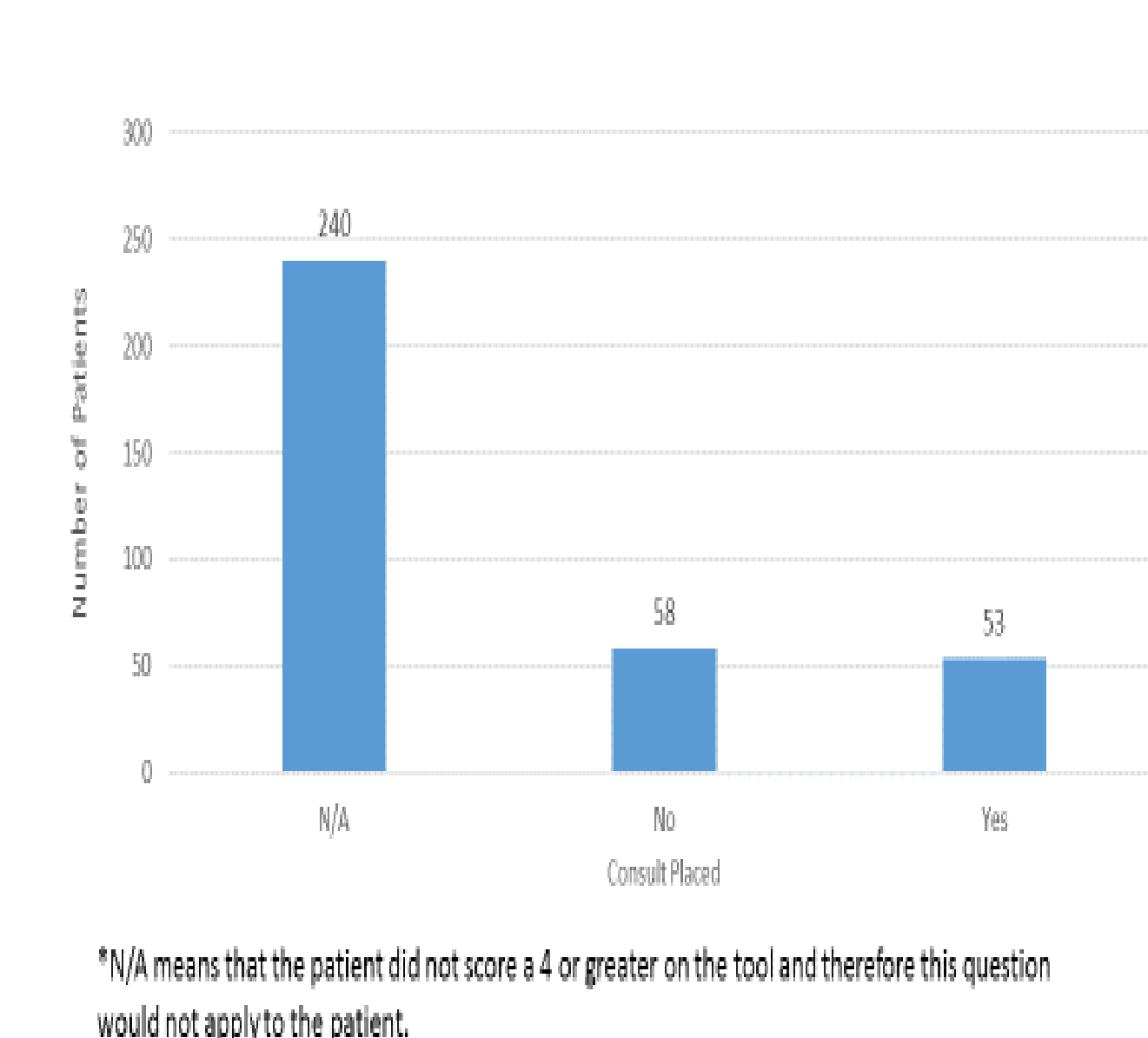
RESULTS

- Standardizing the trigger to initiate ACP discussions and access to Palliative Care in the oncology inpatient population was beneficial to improving communication for the team and patients.
- Even with the SOI there was a communication gap amongst with primary oncologist in regards to ACP at this institution
- SOI Tool was administered at daily rounds to inpatients admitted to the Hematology/Oncology Service January 4, 2016-June 30, 2016
- 96% of patients admitted to the Hematology/Oncology service had the SOI completed
- 48% of patients that scored in with 4 or greater on SOI had an ACP discussion with either Palliative Care or primary team.

What did they score on the Severity of Illness tool?



Was PC/ACP Consult placed w/in 3 days of completed tool?



CONCLUSIONS

- This work suggests more investigation is needed to identify specific communication and organizational barriers to ACP services such as Palliative care
- This study revealed the value a structured SOI tool can provide to a busy interdisciplinary team as a trigger for ACP.

NEXT STEPS

- Utilize an electronic objective SOI Tool to Identify patients with advanced illness and to trigger ACP in the inpatient oncology population at BMC.
- Validate the SOI novel tool with a retrospective chart analysis performed on a similar subset of (300-350) Hematology/Oncology patients.
 - Data points to be examined
 - Score on Tool
 - Age, gender, living situation, admit diagnosis
 - Readmissions, days to death, symptomatology, cancer type
 - ACP discussions, Palliative Care consults
- Explore the attitudes and beliefs of the Hematology/Oncology team in regards to ACP. Collect qualitative data via interviews to gain perspective on ways to positively impact culture and partnerships.

Contact: Nicole.Lincoln@bmc.org with any questions

Leveraging the Electronic Medical Record to Reduce the Rate of Hospital Acquired Clostridium Difficile Infections

Deborah Gregson, Nancy Miller, Thomas Ostrander, Bob Burke, Katherine Scanlon, Matthew Bradley, Kelly Fleming, Youngjin Jung, Raagini, Pooja Jawa, Muna Sheikh, Jacob Walker, Cassandra Pierre

BACKGROUND

Clostridium difficile infections (CDI) are the leading cause of health care-associated diarrhea, and is reported to cause 500,000 patient infections in the United States per year. The Centers for Medicare and Medicaid Services (CMS) has established a target for reducing the number of CDIs.

Boston Medical Center's reported CY2013 Standardized Infection Ratio (SIR) for Hospital Onset CDI was 1.573, above the US National Benchmark of 1.

In Scope: Inpatient, Emergency Medicine; ordering of C Diff PCR testing; Laboratory acceptance/ rejection of samples; Nursing collection processes

Out of Scope: Ambulatory Care, Observation Unit, Laboratory and Nursing processes outside of In Scope

AIM

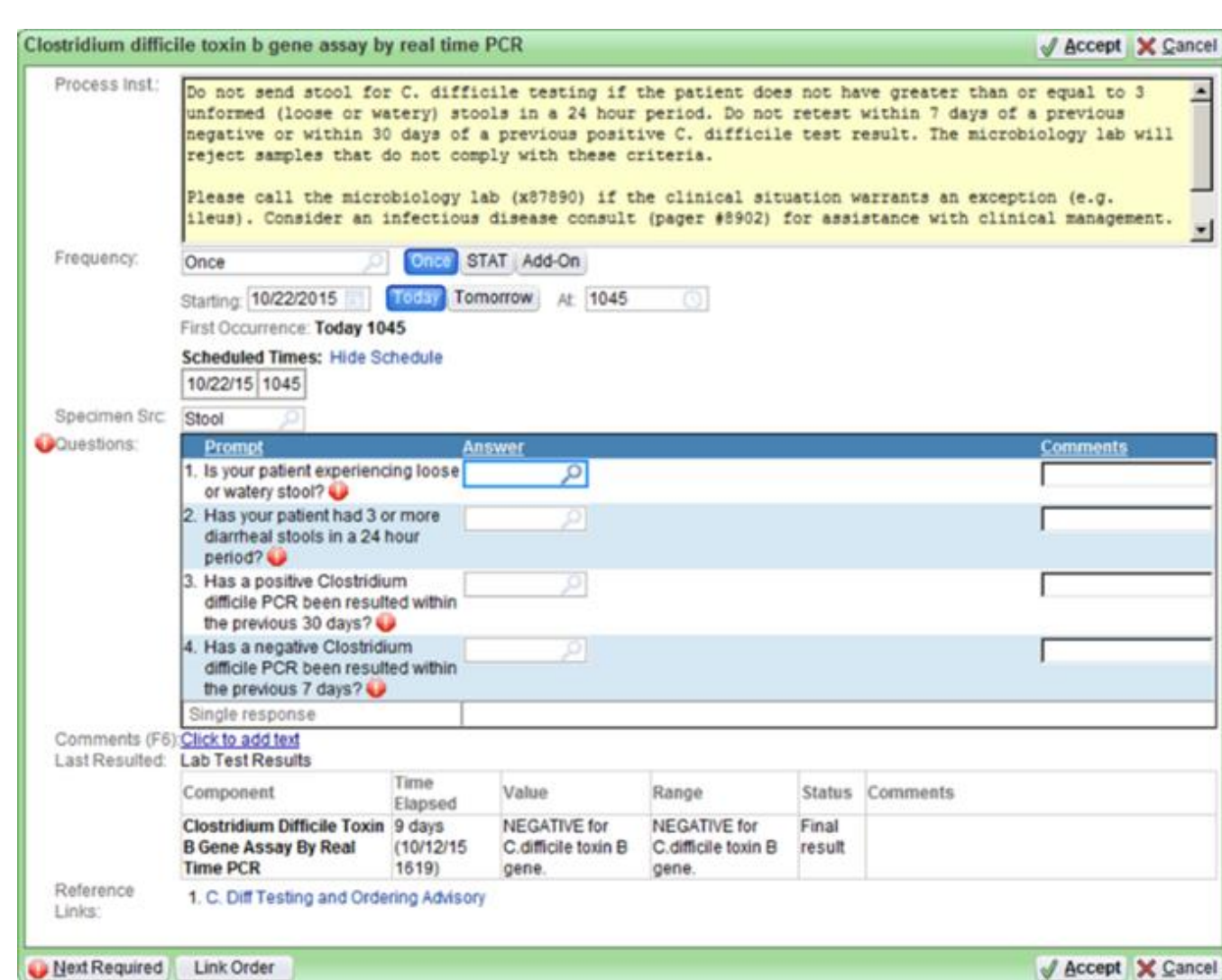
- Reduce the SIR Hospital Onset Clostridium difficile infections reported to CMS expected ratio of ≤ 1 by June, 2016.

METHODS

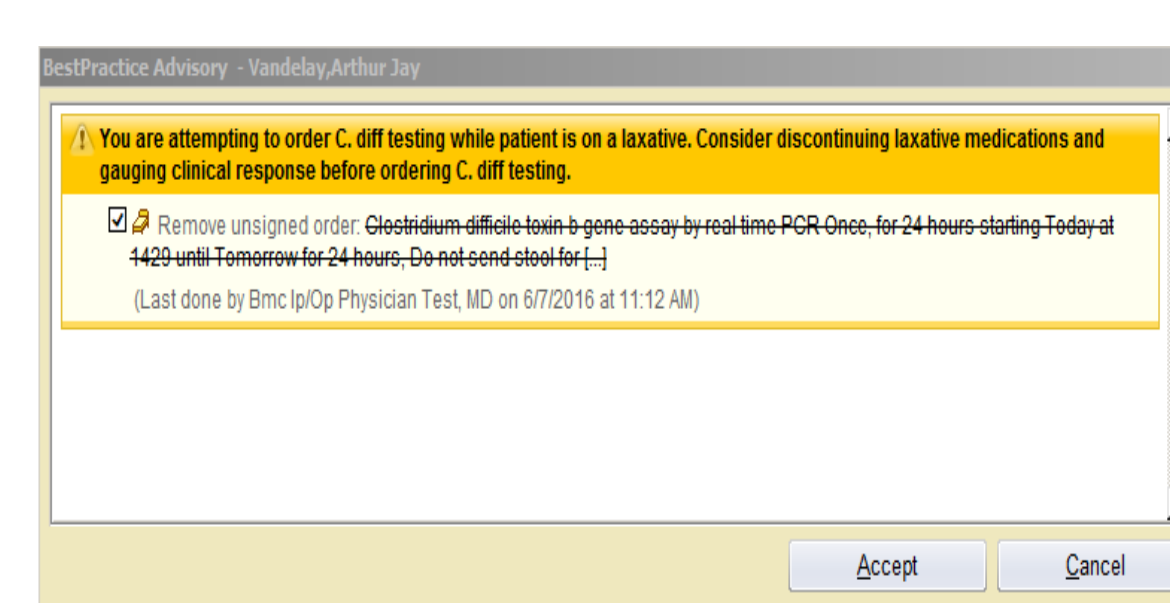
- Using Quality Improvement methodologies a multidisciplinary team addressed the appropriateness of C. diff PCR testing and increased patient isolation through the use of the electronic medical record.
- Methods for data collection included the creation of Workbench reports (Epic eMR), Clarity Reports (data warehouse), and chart review

SOLUTIONS

Changes to the electronic medical record

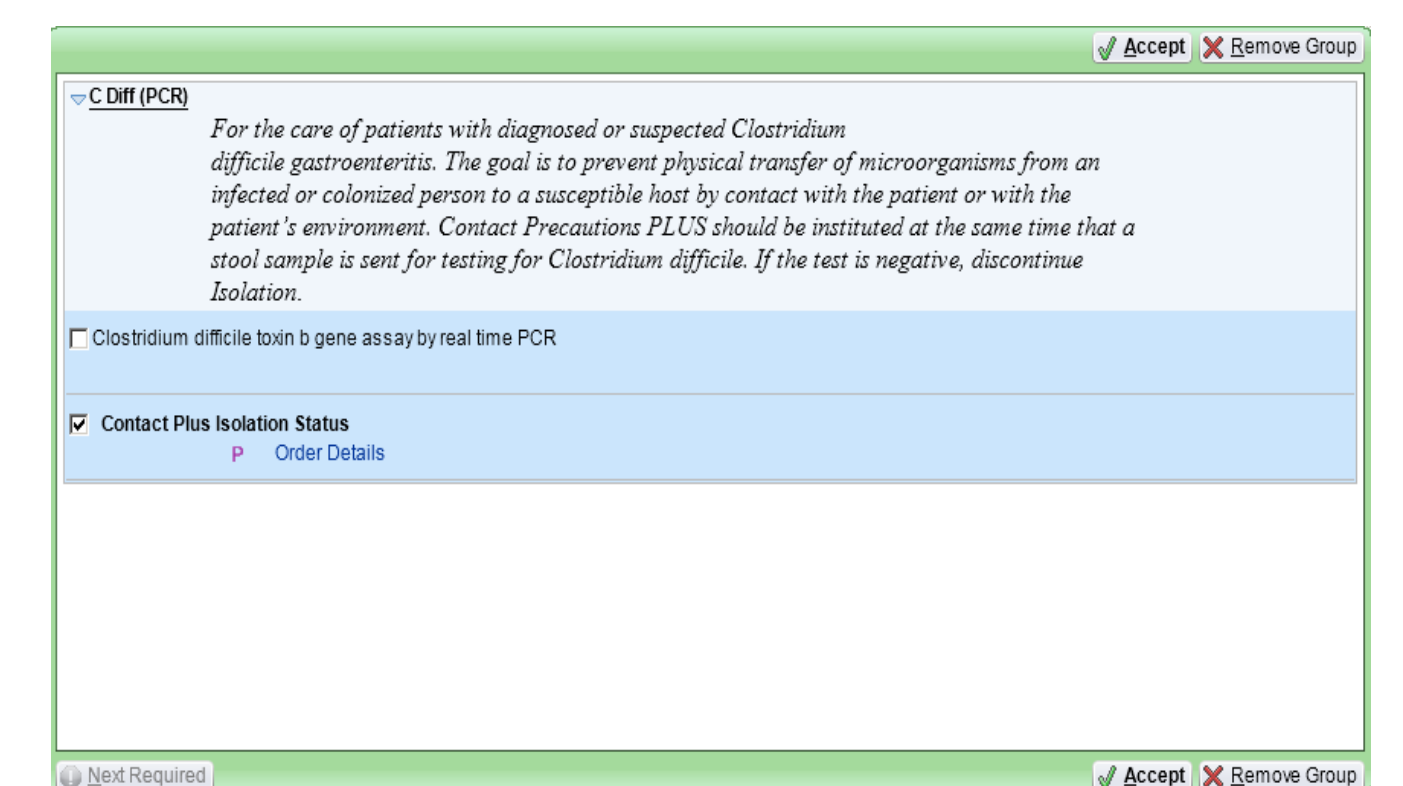


Recommendation	Strength	Additional Information	Reference
Only stools from patients with unexplained loose stools should be tested for Clostridium difficile	D-II	If feces or a C. difficile specimen is submitted, the microbiology laboratory must be contacted of the specific clinical situation.	1. http://www.cdc.gov/dcd/diagnosis/20120401 2. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3390292/
Testing for core should not be performed	D-II	Repeat testing of C. difficile testing within 30 days of a previous negative result should be discouraged. C. difficile testing should remain positive using the restriction of enzymes.	1. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3390292/ 2. http://www.cdc.gov/dcd/diagnosis/20120401
Repeat testing is discouraged.	D-II	Do not repeat C. difficile testing within 7 days of a previous negative result. Studies have shown that repeat testing increases the likelihood of false positive, despite negative PCR should not be performed or without in patients with a high pretest suspicion for obtaining a negative C. difficile test.	1. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3390292/ 2. http://www.cdc.gov/dcd/diagnosis/20120401
Infection control	D-II		1. http://www.cdc.gov/dcd/diagnosis/20120401
Patients with known or suspected CDI	D-II		1. http://www.cdc.gov/dcd/diagnosis/20120401



Laxative Best Practice Alert:
Chart review found that ~50% of patients received a laxative within 72 hours of a C Diff PCR test order

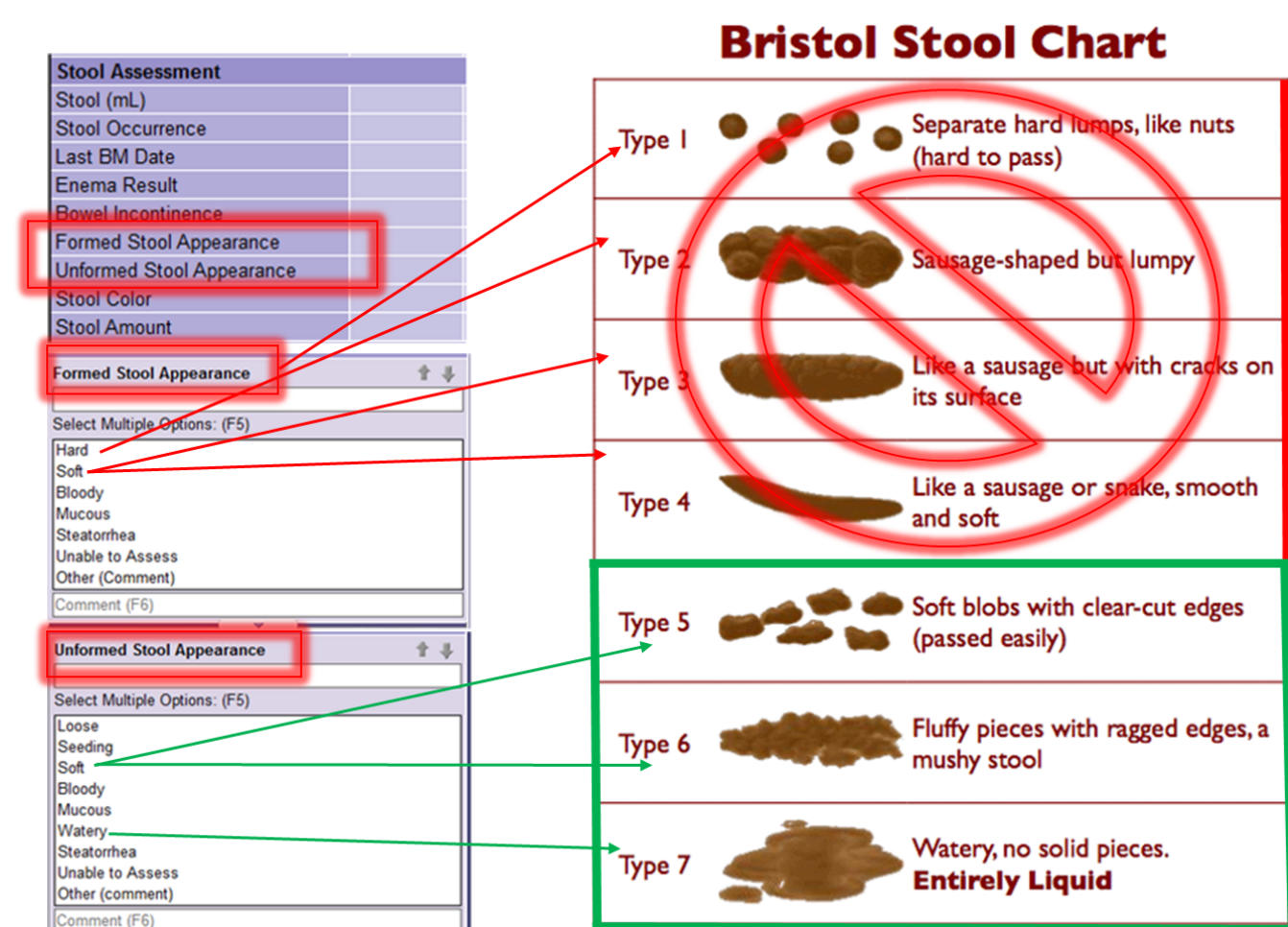
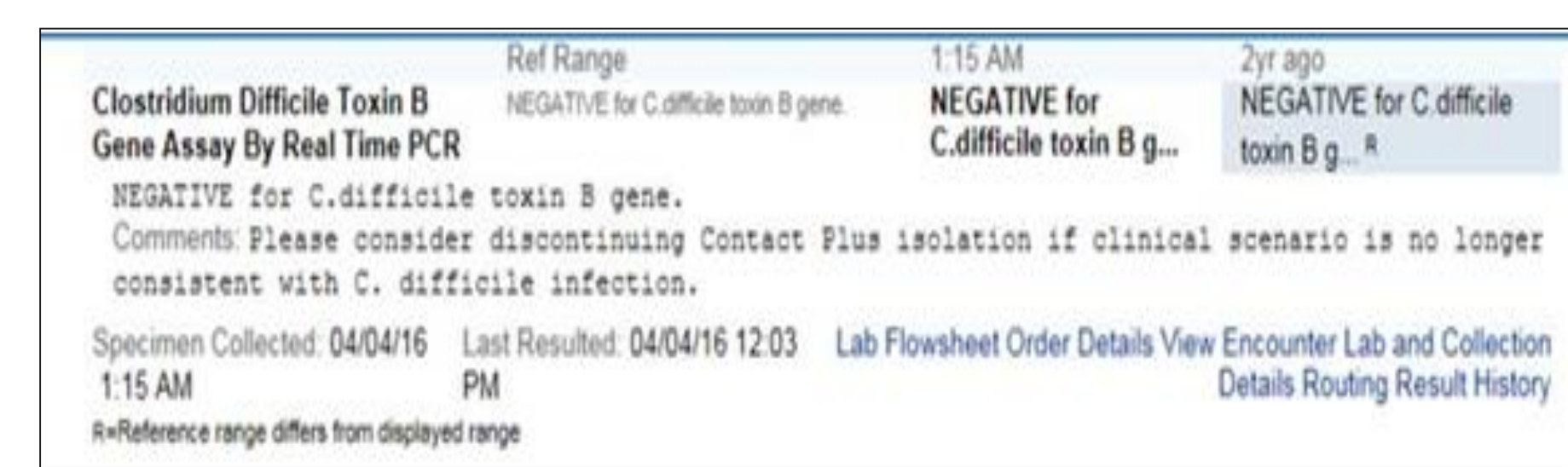
New Order Panel combines the C Diff PCR test order and the Contact Plus Isolation order to reduce the risk of spreading infection between patients and healthcare workers.



Reduce repeat testing by:

- C. Diff PCR order screen modification, advisory provides process instructions for ordering.
- Displaying past lab results within the order has reduced the number 30 day positive and 7 day negative repeat tests
- Lab rejects samples for repeat testing
- Order expires after 24 hours as it no longer meets ordering criteria of

Instructions to discontinue isolation if result negative was created to minimize the impact to bed control for patients who no longer require private rooms

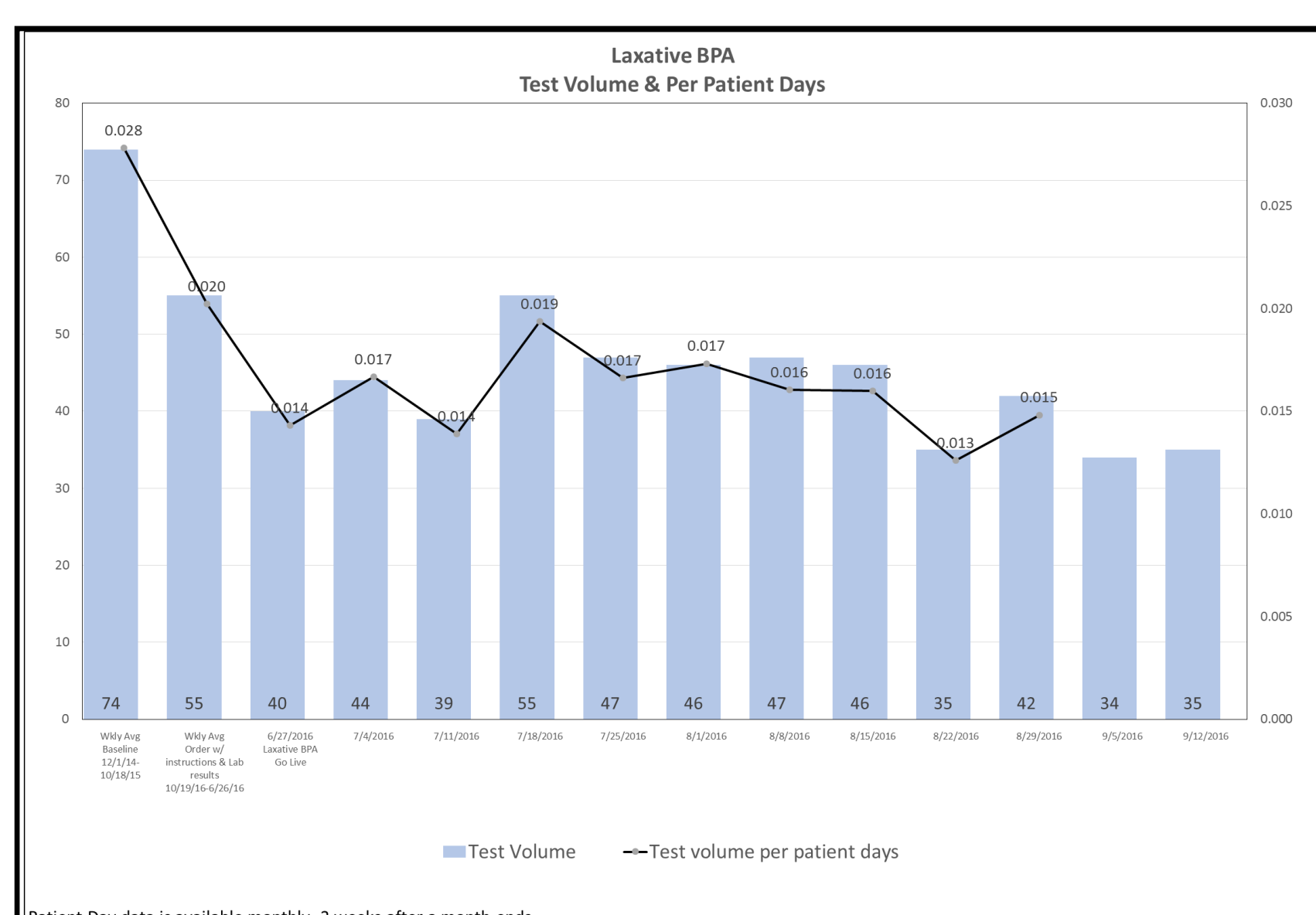


Using the Bristol Stool Chart, created consistent language for documentation, ordering and lab:

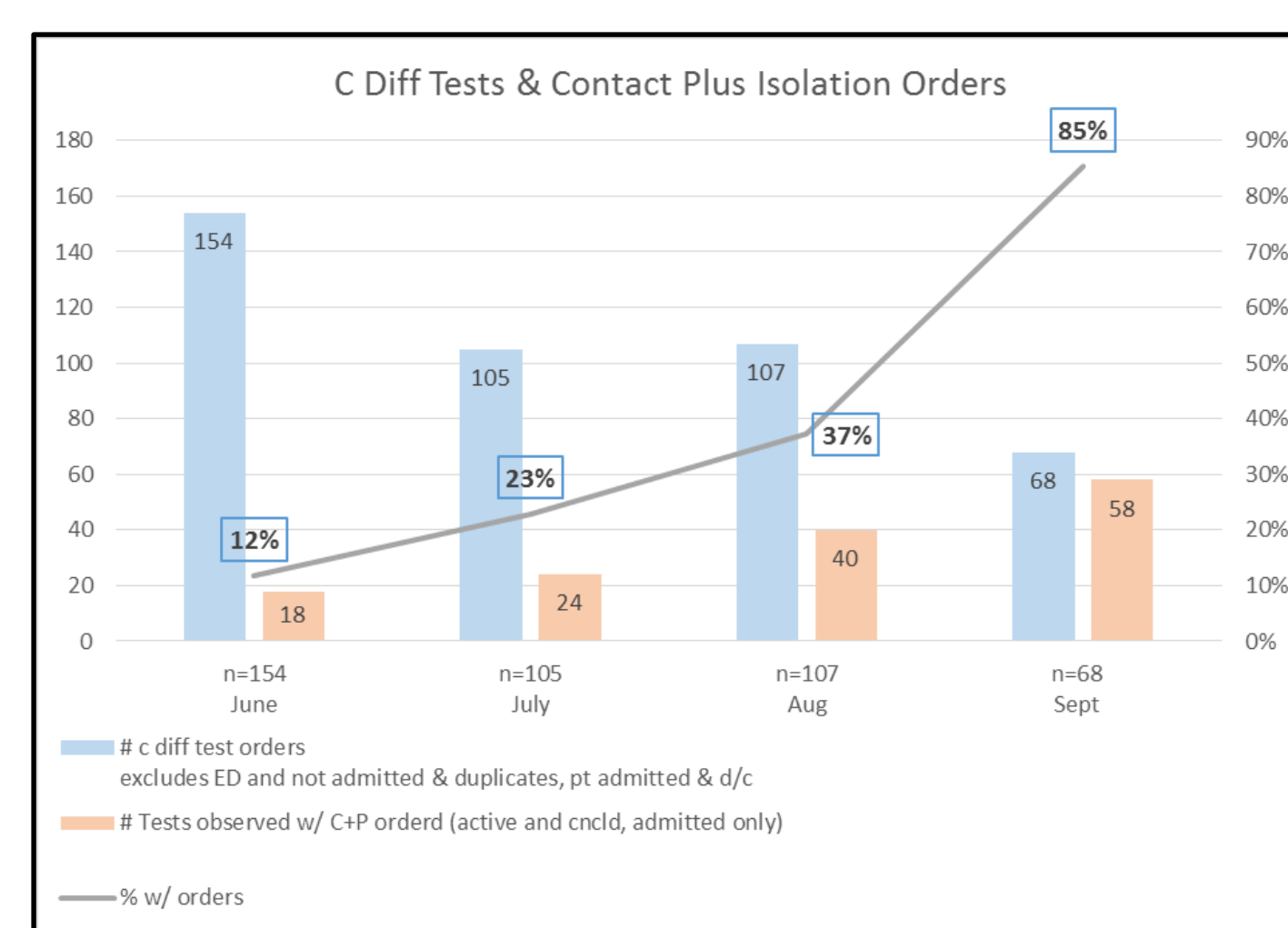
- Updated Nursing Documentation on EPIC flow sheet to align with the Bristol Stool Chart
- Education to appropriate stool samples, nurses instructed not to send inappropriate samples
- Lab rejects inappropriate samples based on sample consistency

RESULTS

Process Measures:



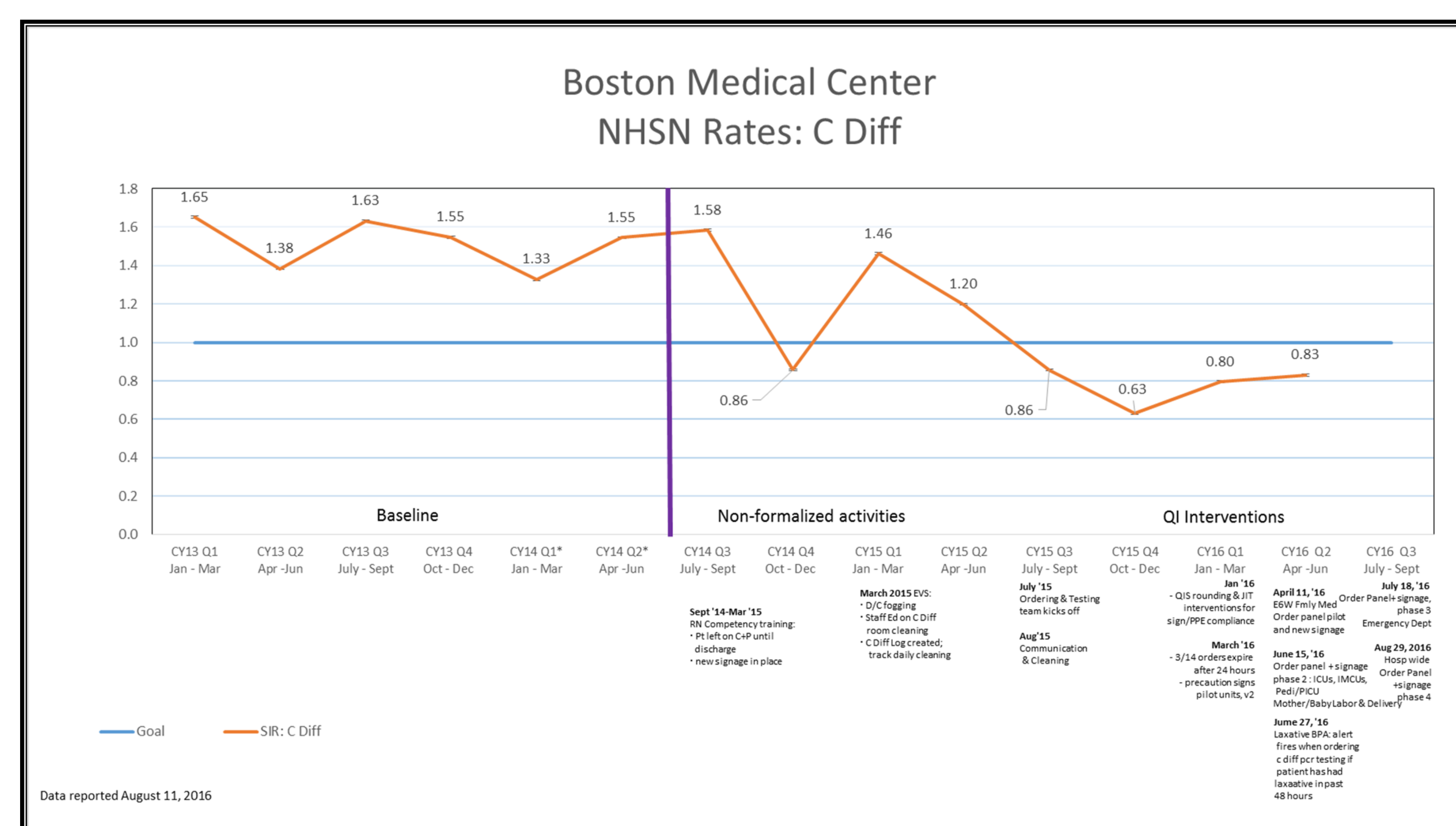
- Decreased test volume by 54%
- Reduced inappropriate repeat testing:
 - 7 day negative by 80%,
 - 30 day positive by 66%
- Improved Contact Plus Isolation at time of test order from 12% to 84%



NOTE: This volume stated is based on observation days only and does not reflect total test volume. Rounding Observations occurred 3-5 times/week, M-F mornings. Report was run from mid-midnight day prior to the time the rounding began. Overlap occurred from day to day based on when orders were written to when results were obtained.

Outcome Measure:

Achieved SIR 4 quarter average 0.78, better than national goal.



CONCLUSIONS

- Through the use of QI and leveraging changes in the eMAR can improve appropriate testing and patient isolation reducing the risk of hospital acquired Clostridium difficile infections

NEXT STEPS

- Establish sustainment plan including the monitoring of performance
- Establish of thresholds for performance on when future interventions are required

Improving the Care of Vaso-Occlusive Episodes in the Adult Emergency Department

Patricia L. Kavanagh, MD*; Andrew Ulrich, MD; Carrie Solomon, MS; Evan Berg, MD; Elizabeth S. Klings, MD; Kelly Killius, PharmD; Lillian E. McMahon, MD; Mirinda Brown-Tyo, MSN, RN; Susan Griever, MS, RN; Cristopher Amanti, MD

BACKGROUND

- Vaso-occlusive episodes (VOE) is the most common reason adults with sickle cell disease (SCD) seek care in the Emergency Department (ED)
- Providing timely treatment for acute VOE in the ED setting is challenging, as 1st parenteral dose should be given within 1 hour of arrival and subsequent doses every 15-30 minutes
 - Tanabe et al. Ann Emerg Med 2012;19(4):430-438.
 - Yawn et al. JAMA 2014;312(10):1033-1048.

OBJECTIVE

- To improve care for VOE, based on national guidelines:
 - Triage acute VOE as emergency severity index (ESI) 2
 - Provide 1st parenteral (IV/IM) opioid within 60 mins of arrival
 - Provide 2nd parenteral (IV/IM) opioid within 30 mins of 1st dose
 - Initiate PCA in the ED for those requiring admission

METHODS

- Setting:** Adult level 1 trauma center with 120,000 visits annually within an academic, urban, safety-net hospital.
 - 200 adults with SCD receive care at BMC Adult Hematology
- Study Sample:**
 - Uncomplicated vaso-occlusive pain episodes
 - Exclusion dx: Fevers, ACS, atypical chest pain, priapism, abdominal pain, headache, severe anemia, DVT/PE
 - Moderate or severe pain (≥5 of 10 on Numeric Rating Scale)
 - Received 2+ doses of parenteral opioids (IV or IM)
- Interventions:**
 - Timeline: Baseline—May-Aug 2015; Intervention—Sept-Aug 2016
 - Multidisciplinary team: MD (ED and hematology), RN, pharmacy, data analyst
 - Standardized algorithm
 - ESI=2 at triage
 - 1st parenteral opioid dose given within 60 minutes of arrival
 - Total of 3 doses of opioids given every 30 minutes
 - Start PCA for admitted patients
 - Individualized care plans: Brief clinical snapshot and doses for opioids, including PCA settings
 - Education for all ED staff
 - QI lead met with RN staff in Oct 2015 & Feb 2016
 - Email communication with residents & attendings
 - EPIC Order set: Can order 1st parenteral dose + 2 additional doses prn

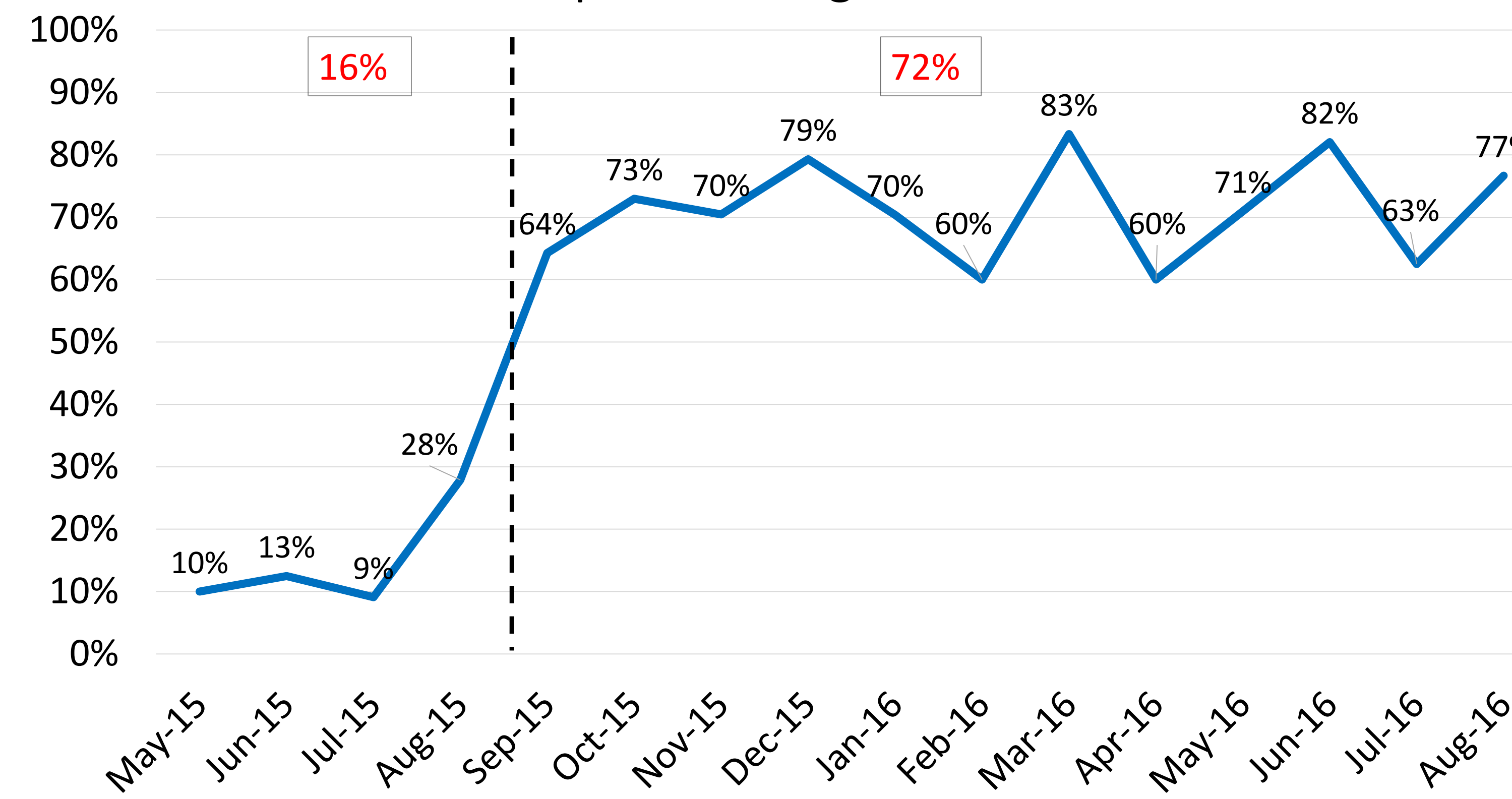
RESULTS

Item	n=130 subjects
Age, yr; average (SD)	29 (12)
Female, # (%)	66 (51%)
Hb SS genotype, # (%)	78 (60%)
# ED visits for VOE, median (range)*	2 (1-44)

* among those with an ED visit; 30% adults with SCD not seen in ED during this time

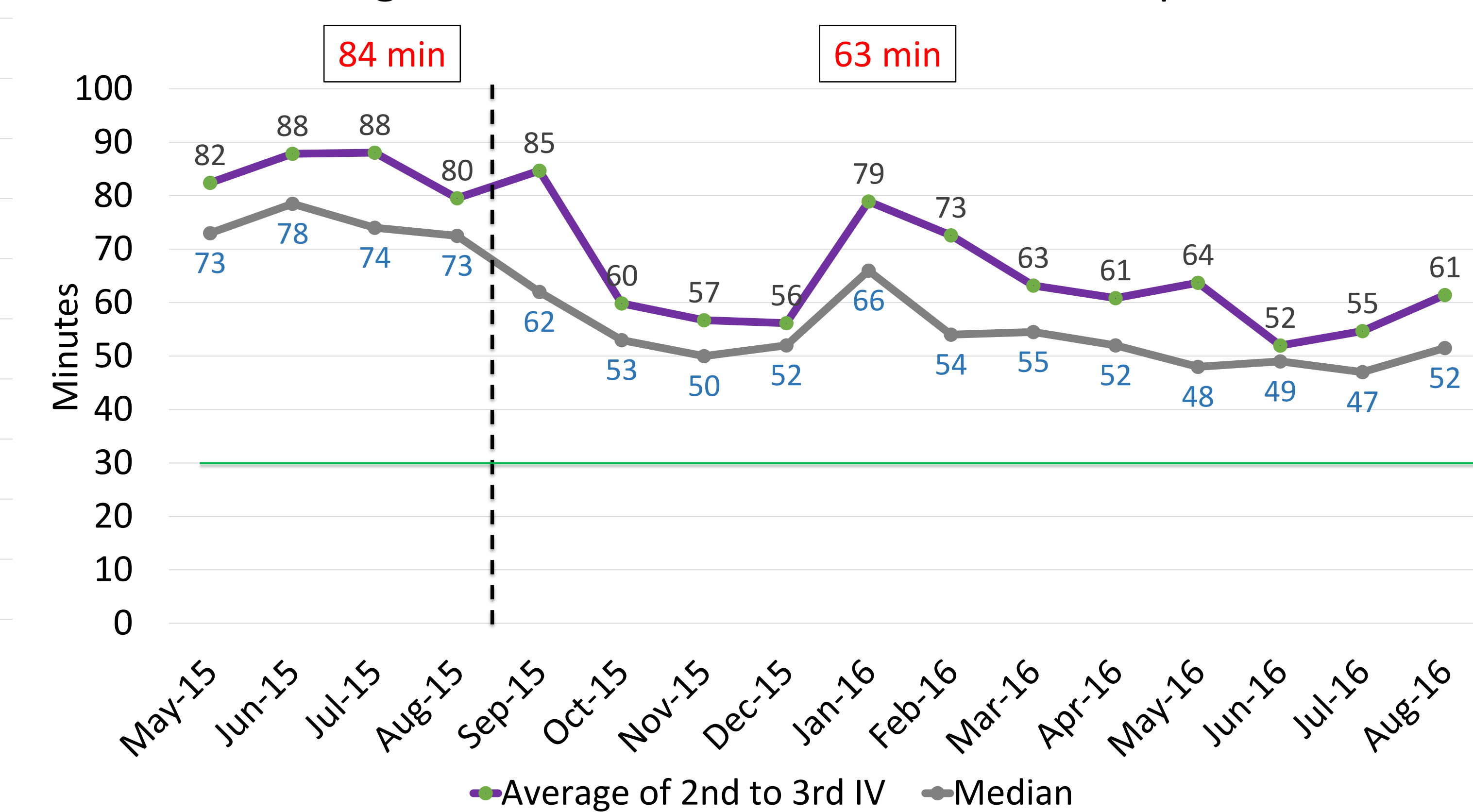
RESULTS (Continued)

Proportion Triaged as ESI=2

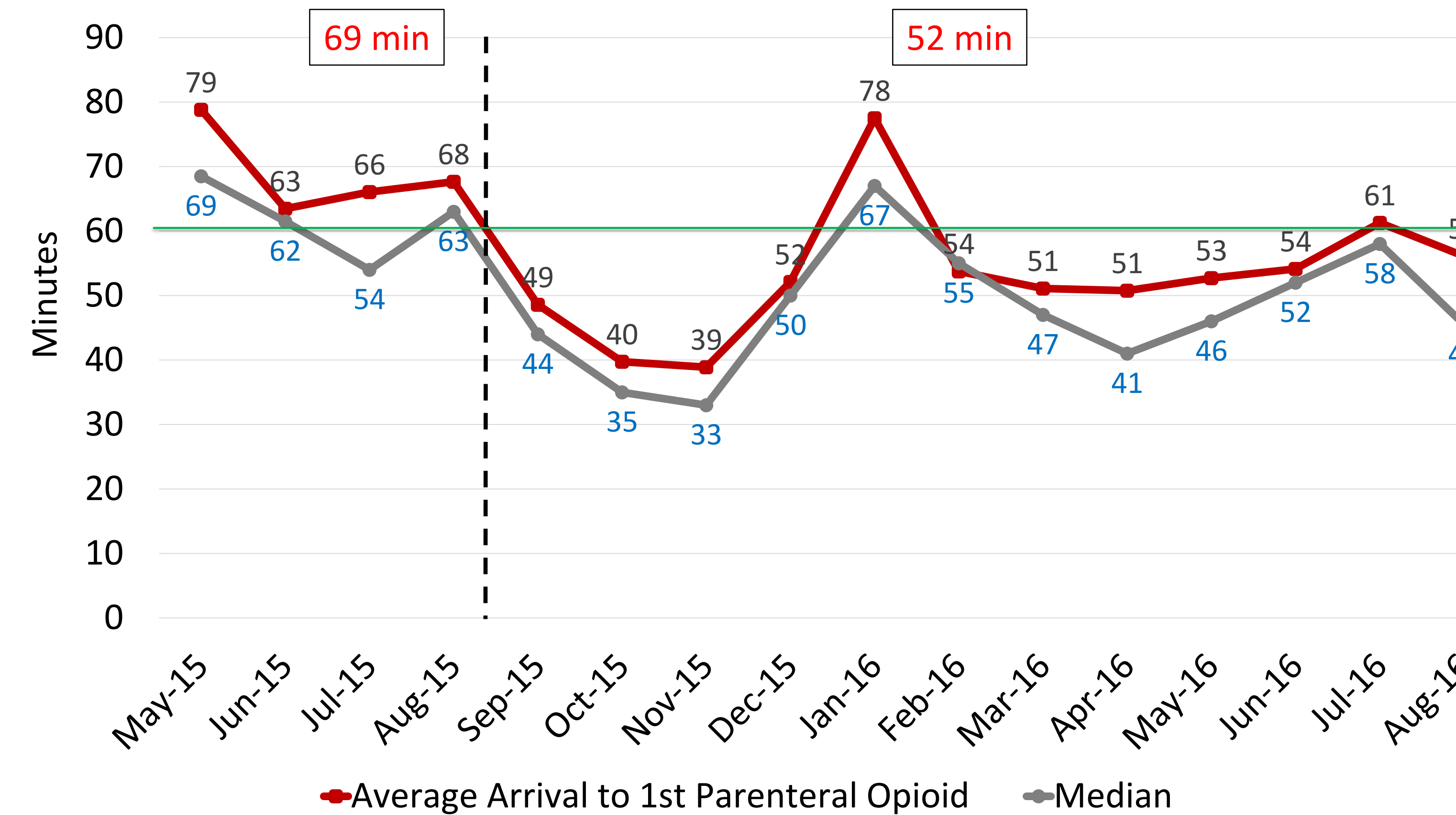


RESULTS (Continued)

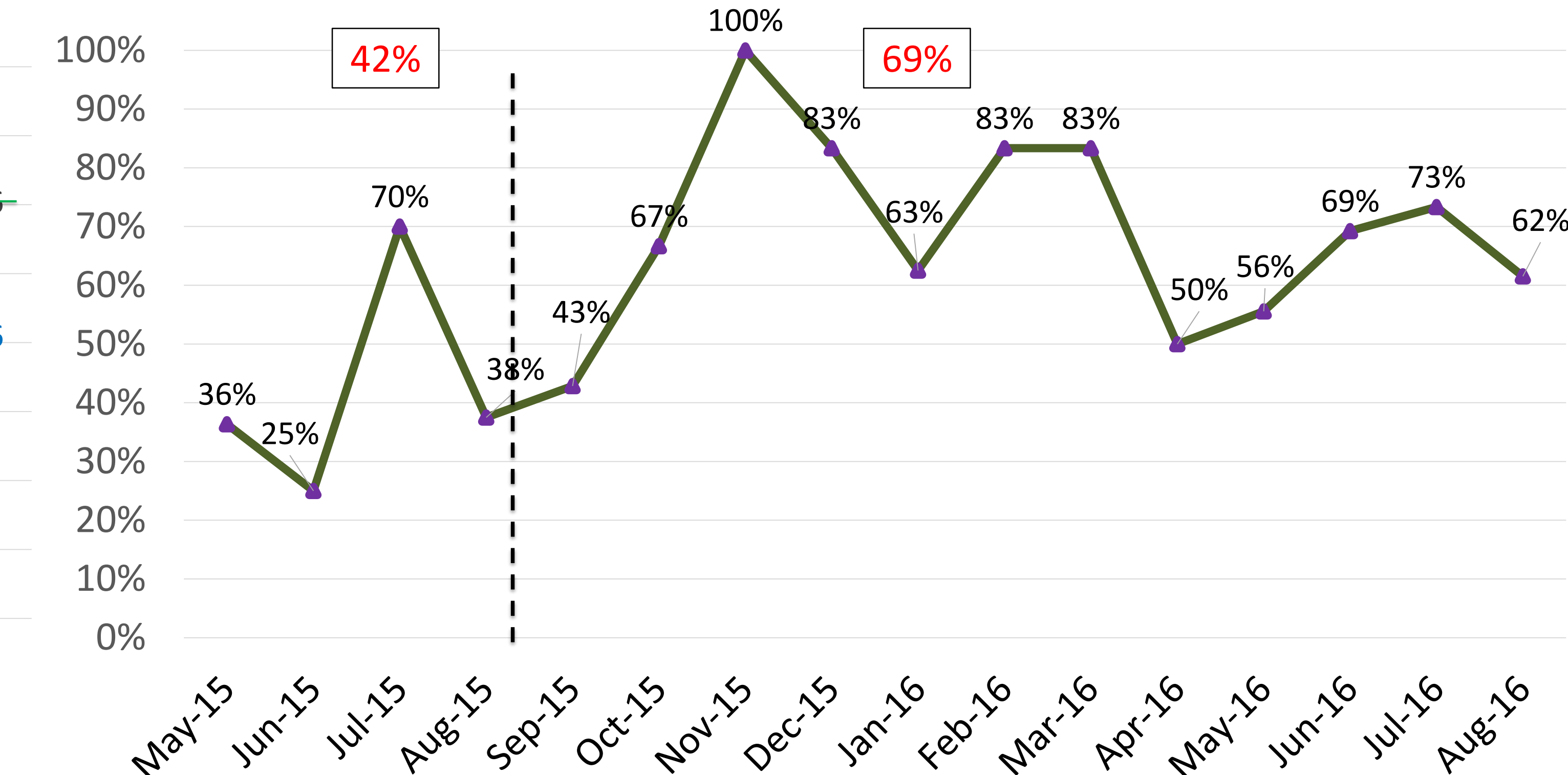
Average Time from 2nd to 3rd Parenteral Opioid



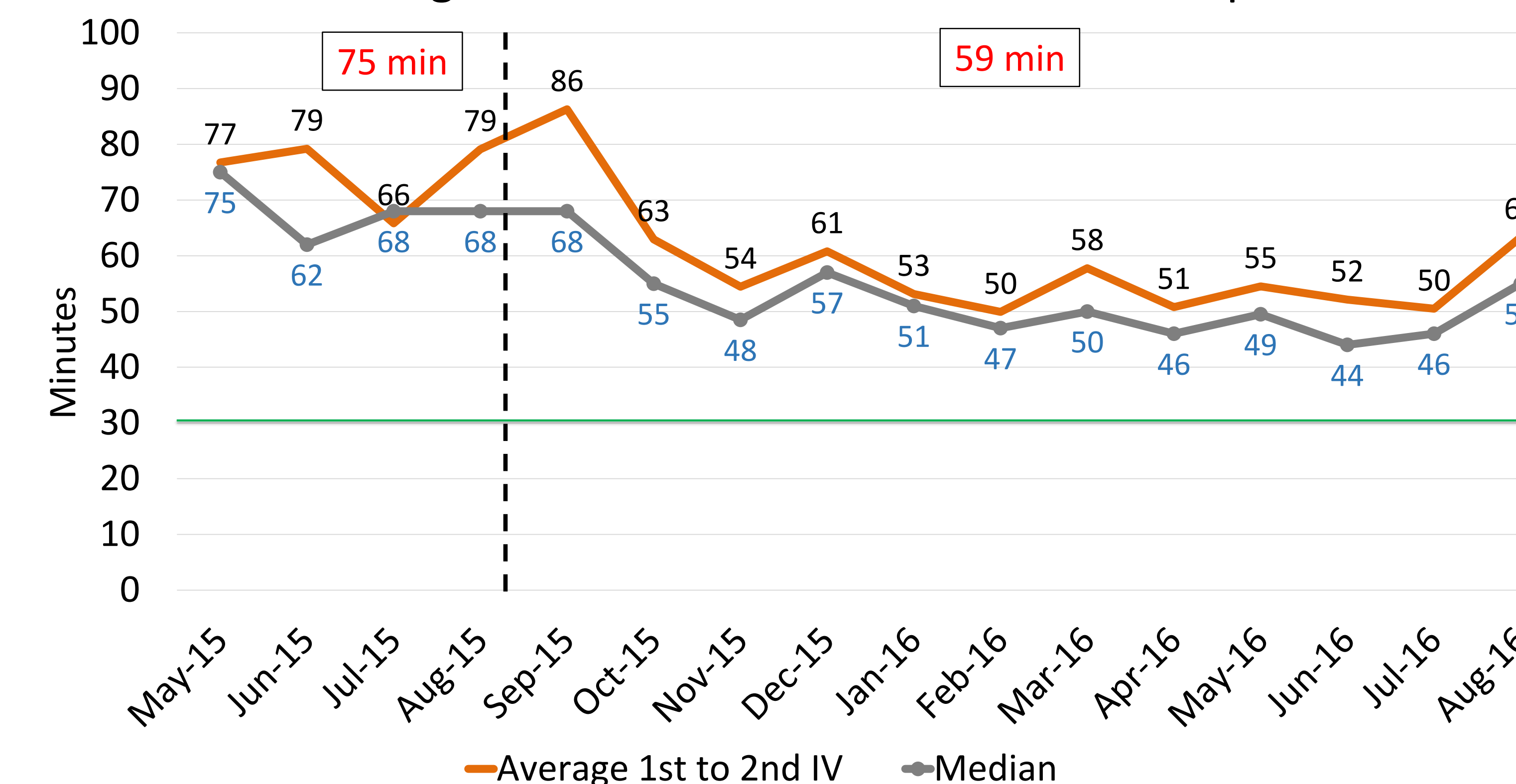
Average Time from Arrival to 1st Parenteral Opioid



% Admitted with PCA



Average Time from 1st to 2nd Parenteral Opioid



SUMMARY

- Time to first pain medication met guidelines of 60 minutes, times to subsequent doses (medians) trending towards goal of 30 minutes
- No change seen in proportion discharged

LIMITATIONS

- Process measures; need to collect data on outcomes such as patient satisfaction, 30 day readmission rates

CONCLUSIONS

- Proof that one of the busiest EDs in the country can provide high quality care for VOE by using an algorithm & individualized care plans

ACKNOWLEDGEMENTS

- Adults living with SCD and their families
- Department of Emergency Medicine: Jon Olshaker, MD
- Hospital Leadership: Alistair Bell, MD, MBBS; Stan Hochberg, MD; James Moses, MD, MPH

Initiation of a Pharmacologic Prophylaxis Program to Prevent Obstetric Associated Venous Thromboembolism

Pooja Shah; Praachi Rajee; Nick Thoreson; Jo Ann Thomas-Lewis; Rachel Shelley-Abrahamson; Ginny Combs, MSN, RNC-MNN, IBCLC; Lynne Lambert, RN; Susan Clark; Marie Kourtelidis, CNM; Julie Mottl-Santiago, CNM; Emma Trucks, MPH; Emily Jansen, MPH; Rhiannon Iorio, MPH; Jodi Abbott, MD, MHCM, Ron Iverson, MD
Department of Obstetrics and Gynecology

BACKGROUND

- While the absolute risk for venous thromboembolism (VTE) is low, VTE persists as a leading cause of preventable maternal mortality in the United States. (Creanga et al 2015, Obstet Gynecol. Jan;125:1)
- Pregnant and postpartum women are at elevated risk for a VTE during pregnancy; pregnancy was found to confer four times the risk of experiencing a VTE event compared to non-pregnant counterparts in a 30-year population-based study. (Heit et al 2005, Ann Intern Med. Nov 143:10)
- Prior to the start of the current effort, medical students initiated a project employing a teach-back method to educate patients on their VTE risk and appropriate prophylaxis measures. At baseline, providers in Labor and Delivery used paper forms to assess risk using the Physician-Patient Alliance for Health & Safety (PPAHS) guidelines, and entered the result in the patient's chart.
- We adopted the Safe Motherhood Initiative Maternal Safety Bundle for Venous Thromboembolism, providing a frame for individualized risk assessment and prophylaxis (mechanical and pharmacological) to prevent VTE in high risk women delivering at BMC.
- An estimated 45% of the patient population in Labor and Delivery at BMC are at high risk for a thromboembolic event per Safe Motherhood Guidelines.
- In the first phase of our project, reflected here, we focused on ensuring inpatient prophylaxis to postpartum women; in the second phase we developed a postpartum program for patient self-administration of enoxaparin.

AIM

- To adopt new set of VTE risk assessment and prophylaxis guidelines and train all frontline providers on L&D by December 2015.
- Increase the percentage of L&D admitted patients who have a VTE risk assessment documented to 80% by June 2016.
- Increase the percentage of VTE risk assessment result documented in the patient's problem list to 80% by June 2016.
- Increase the percentage of high risk postpartum women receiving prophylactic enoxaparin in-house to 80% by June 2016.
- Roll out a hard coded VTE Risk Assessment and order set by July 2016.

METHODS

- We used the Institute for Healthcare Improvement (IHI) Model for Improvement and a Plan-Do-Study-Act methodology.
- We developed a chart abstraction tool to gather data on risk assessment practices during antepartum and postpartum admissions as well as to measure prophylaxis practices.
- Providers performed a retrospective chart audit to establish our baseline data set.
- First, second and third-year medical students audited antepartum and delivery admission charts on a weekly basis.

SOLUTIONS

- We formed an interprofessional committee consisting of representatives from nursing, midwifery, anesthesiology, pharmacy, obstetric and family medicine physicians, case management, and continuing medical education.
- We determined a multimodal strategy involving provider education on risk assessment and patient education on the risk of VTE would encourage delivery and acceptance of prophylactic measures. Provider teaching and performance feedback occurred during regularly scheduled meetings and patient teaching was delivered at the bedside. We also developed an informational handout for patients (Figure 1).
- In December 2015 we disseminated a "VTE Guideline for OB" Reference Tool to provide an at-a-glance reference prior to the rollout of the EPIC build (Figure 2). The tool underwent an iterative update process to improve clarity and readability.
- The creation of an EPIC-based risk assessment and associated order sets (Figure 3) were the central interventions to ensure risk assessment be performed reliably, and that high risk patients receive necessary prophylaxis.

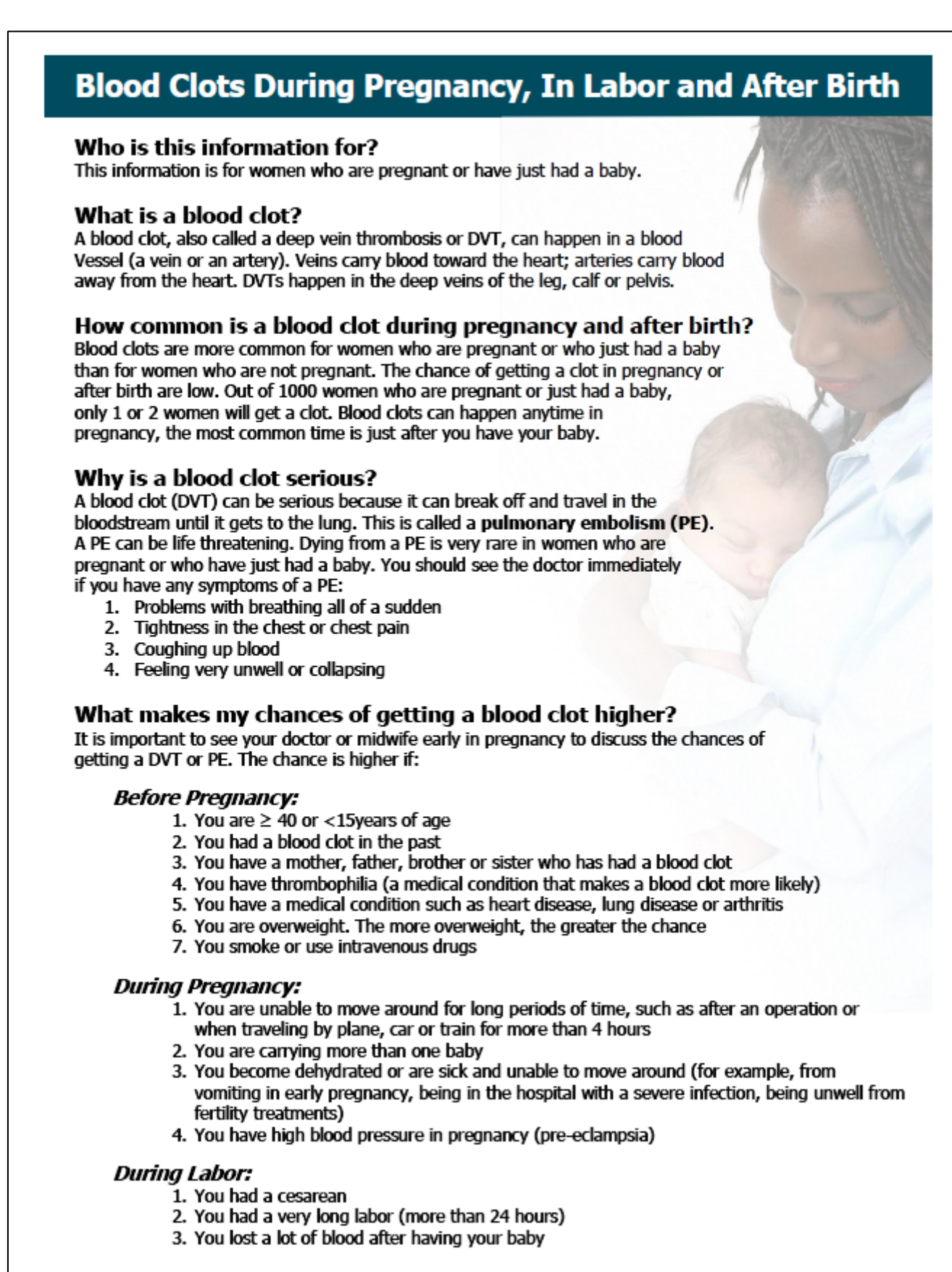


Figure 1



Figure 2

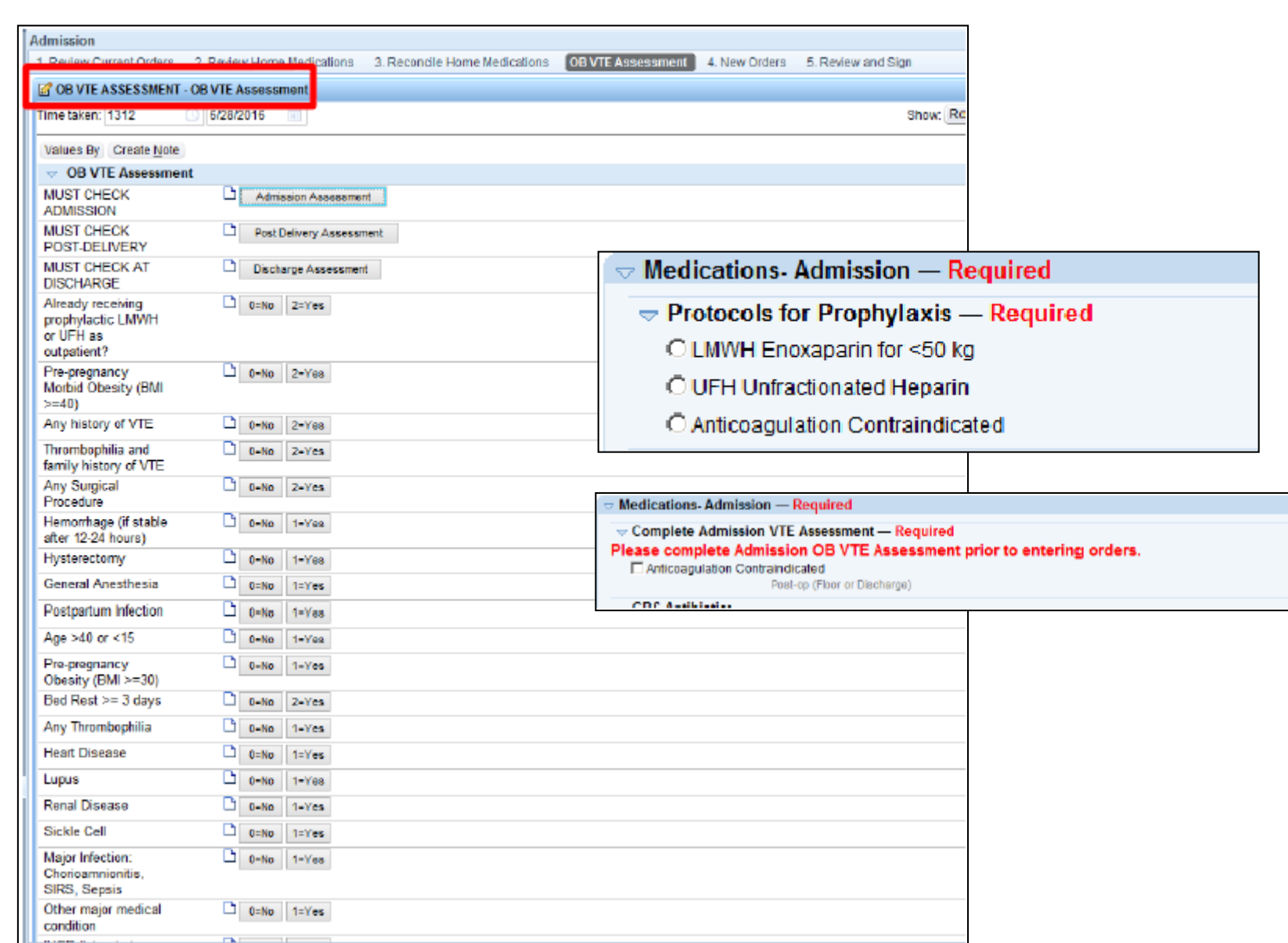


Figure 3

RESULTS

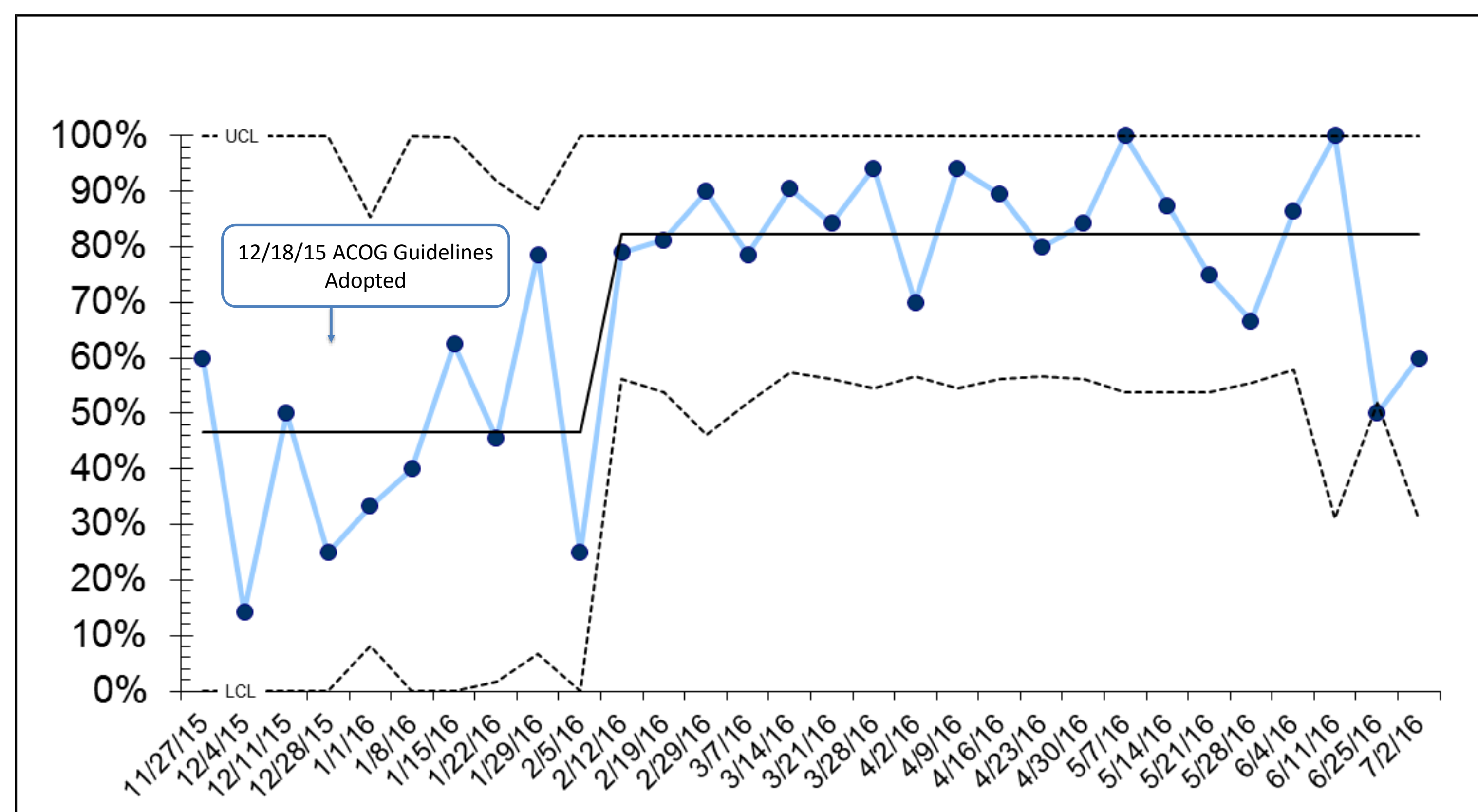


Figure 4: Percent of patients seen for a delivery hospitalization at BMC OBGYN who had a risk assessment documented during the most recent admission (Prior to EMR Integration)

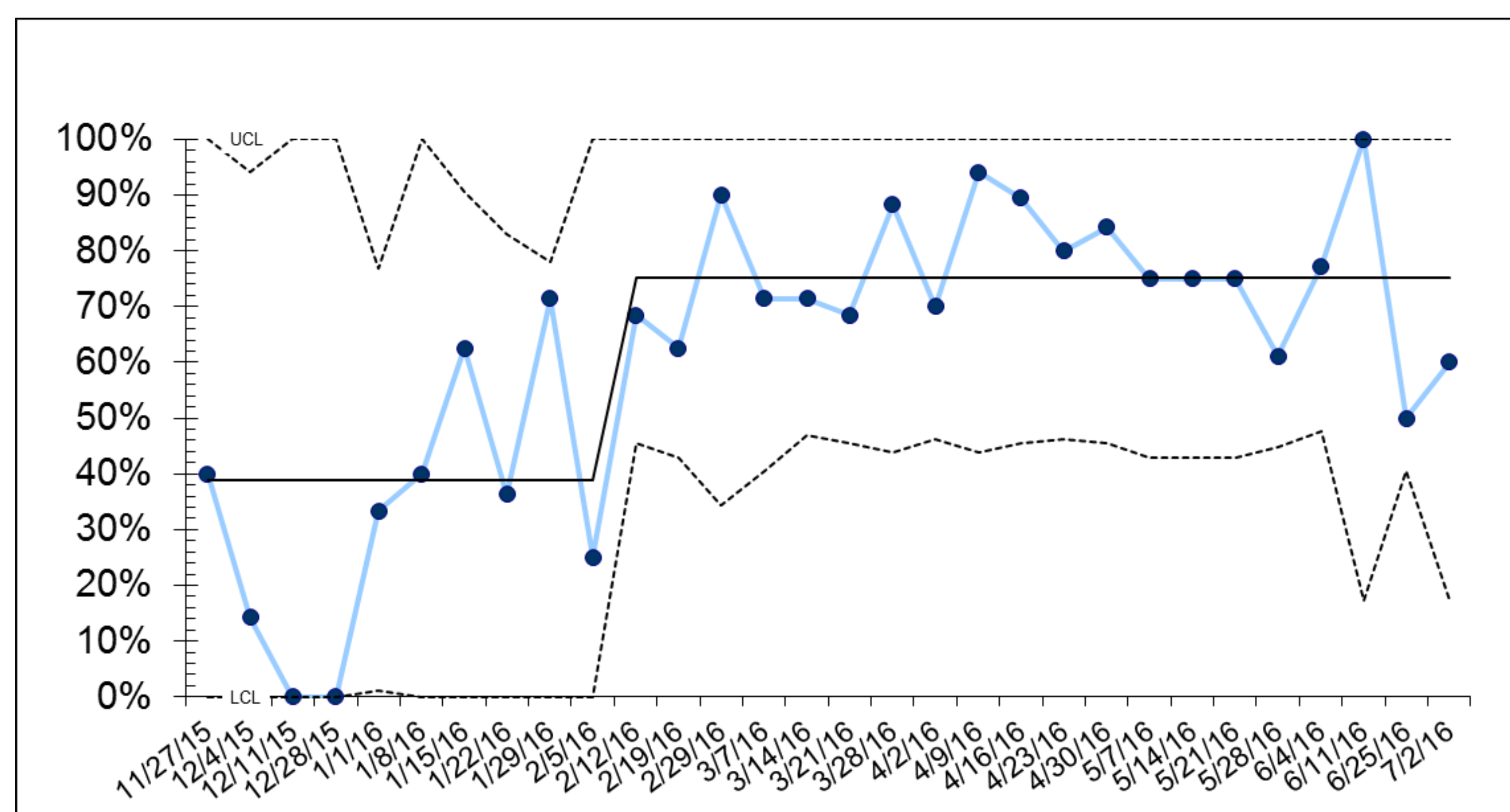


Figure 5: Percent of Patients with Risk Assessment Result Documented on Problem List (Prior to EMR Integration)

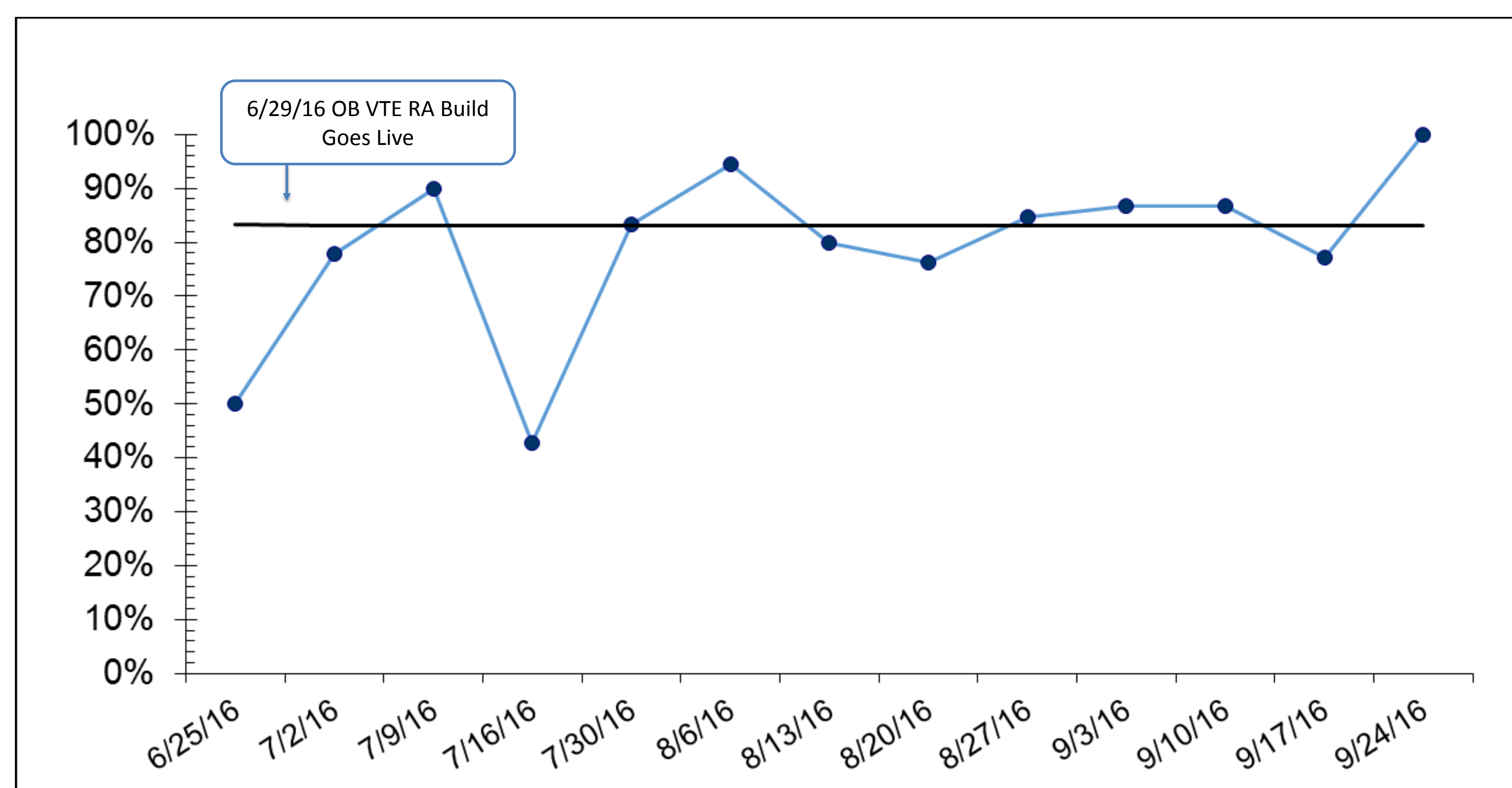


Figure 6: Percent of Patients with Risk Assessment Result Documented on Problem List (Post EMR Integration)

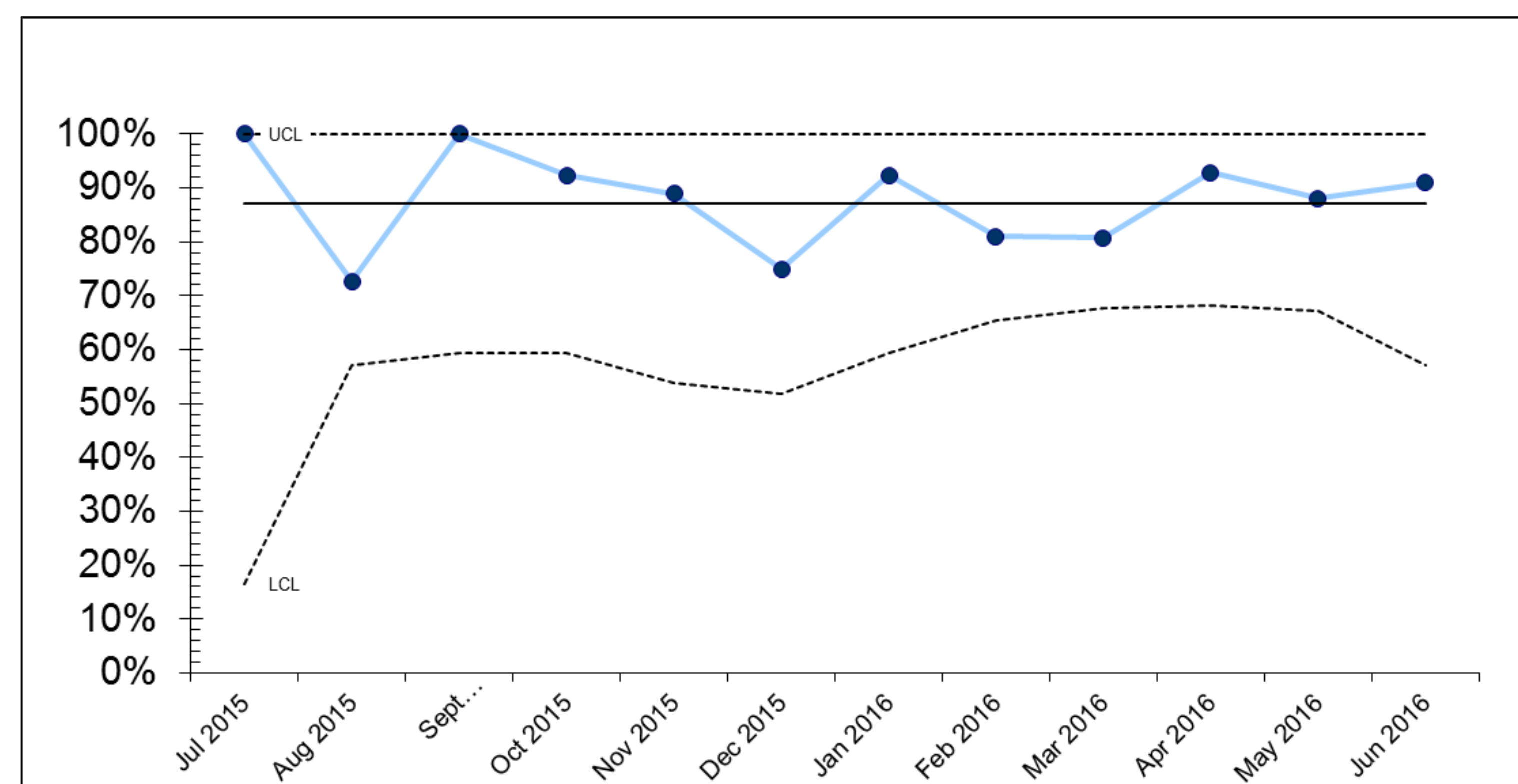


Figure 7: Percent of high risk patients receiving prophylactic enoxaparin during admission

CONCLUSIONS

- Documentation of risk assessment anywhere in the chart was 76% in June 2016 (N=41).
- Documentation of risk assessment in the problem list was 71% in June 2016 (N=41).
- Uptake of in-house administration of enoxaparin was very high reaching an average of 87% of the high risk patients whose charts were audited over the duration of the project (N=180).
- Planning for the EPIC build began at the end of February 2016 and successfully launched on June 29, 2016, leading to 84% of risk assessment documented in the problem list in September 2016 (N=55), and 98% (N=55; N=1 declination) prophylactic enoxaparin prescribed in the discharge state of care in September 2016.
- Phase 2 of this effort expanded into post-discharge prophylaxis, and included nurse education of patient self-administration of enoxaparin.

NEXT STEPS

- We initiated a plan for an ongoing dashboard of key metrics from the project, including percentage of patients with documented risk assessment, percentage of patients who are high risk based on risk assessment, percentage of high risk patients who receive or have a documented declination for enoxaparin, and percentage of high risk patients who have a prescription for enoxaparin at discharge.
- Future opportunities for improvement include testing Meds to Bed (process mapping ideal state and ensuring providers have administrative support).

Elisha Wachman, MD¹; Susan Minear, MD¹; Bobbi Philipp, MD¹; Ginny Combs, MSN, RN¹; Karan Barry, RN¹; Kristine Smith, RN¹; Cathleen Dehn, RN, PhD¹; Donna Stickney, RN¹; Kate Mitchell; Rachel Goldstein; Nicole Penwill^{2,3}; Hira Shrestha, MA¹; Elizabeth Hutton, MD¹; Rachel Hoch, NP¹; Sheila Jane Lewis, NP¹; Rishitha Bollam³; Nancy Desai³; Jennifer Driscoll, RN, IBCLC¹; Robin Humphreys, RN, IBCLC¹; Hannah Simons, RN¹; Judy Burke, RN¹; Lauryl Ramakrishnan, NP¹; Camilla Farrell, PharmD⁴; Katie Yasigian, SW⁵; Jordana Price, MD⁶; Michelle Sia, DO⁷; Kelley Saia, MD⁷; Davida Schiff, MD¹
 (1) Department of Pediatrics, (2) BUSPH, (3) BUSM, (4) Pharmacy, (5) Social Work, (6) Department of Family Medicine, (7) Department of Obstetrics & Gynecology

BACKGROUND

- Neonatal Abstinence Syndrome (NAS) due to in-utero opioid exposure has increased 5 fold over the past decade.
- BMC specializes in the care of women with opioid use disorders in pregnancy, caring for them through Project RESPECT.
- BMC cares for ~120-150 newborns/year with in-utero opioid exposure, accounting for 12% of all opioid-exposed infants in the state.
- Infants who require pharmacologic treatment for NAS are hospitalized for 2-3 weeks with a significant burden on the inpatient pediatric services.
- Pre-intervention, BMC was pharmacologically treating 82% of all infants.
- BMC was utilizing neonatal morphine as first-line pharmacologic treatment with a mean LOS for treated infants of 20 days.

What does the evidence say?

- Strict use of the Finnegan NAS scale (a 20 item scale of symptoms yielding a numerical total score) for medication decisions may lead to over treatment. Prioritizing key symptoms that impact infant functioning (“eat/sleep/console”) may be better practice.
- Non-pharm care methods such as breastfeeding and rooming-in can result in improved outcomes.
- While morphine and methadone are both recommended options for treatment, preliminary evidence suggests methadone may shorten LOS.



AIM

- By June 2017, we aim to reduce our need for pharmacologic treatment to 50% and LOS for all opioid-exposed infants by 30%.
- By December 2016, we aim to reduce our LOS for treated infants by 20%.

METHODS

- Multidisciplinary QI team including physicians, nurses, nurse practitioners, medical and public health students, lactation consultants, pharmacists, and social workers from the NICU, Mother-Baby Unit, Pediatric Inpatient Unit, and Project RESPECT in place since 2013
- Spring 2016: Team set new aims to reduce pharmacologic treatment rates
- Spring 2016: Lean QI methodology was used to identify causes for maternal-infant separation during the hospitalization that could impede optimal non-pharmacologic care
- Stakeholder interviews with staff and parents
- Outreach to other NAS centers who have successfully achieved these goals with BMC site visit in June 2016
- Plan-Do-Study-Act (PDSA) cycles initiated using the IHI Model for Improvement
- On-going monthly data collection of NAS inpatient outcomes: need for medication treatment, LOS, secondary medication use, parental presence at the bedside, breastfeeding rates

SOLUTIONS

- **PDSA #1: Non-Pharmacologic Care = First-line Treatment for NAS**
 - 1) **Staff education:** Resident physician education monthly; Healthstream and in-person in-services for all nurses
 - 2) **Change in prenatal messaging** about non-pharmacologic care
 - 3) **“Bundle of Care”** handout and education given to all mothers
 - 4) **Change in physician score interpretation** -> focus on functioning of the baby (“eat/sleep/console”) rather than the total score
- **PDSA #2: Switch to methadone as first-line pharmacotherapy**



SUPPORTIVE BUNDLE OF CARE



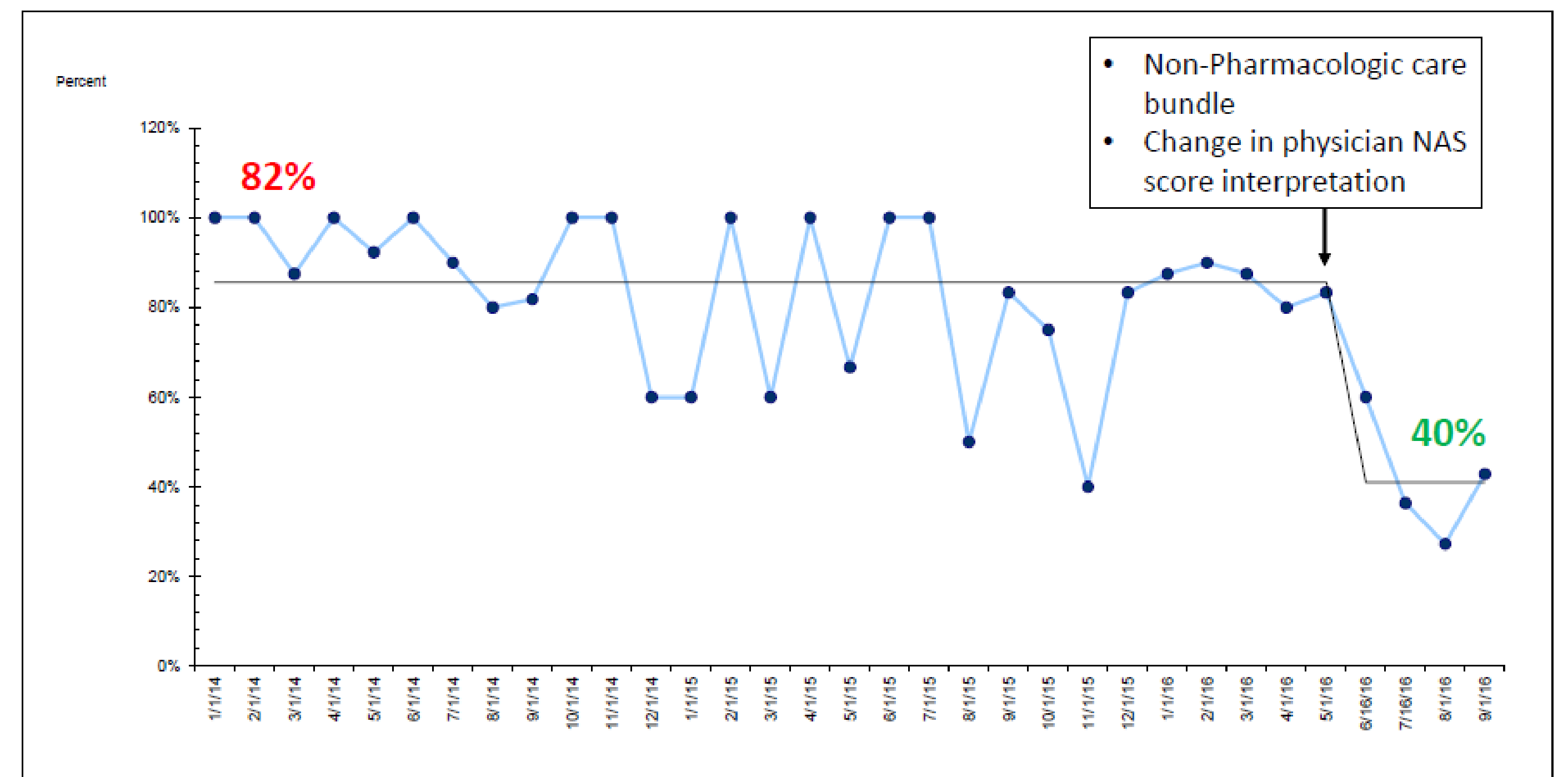



Be with your baby:
You are part of your infants treatment!

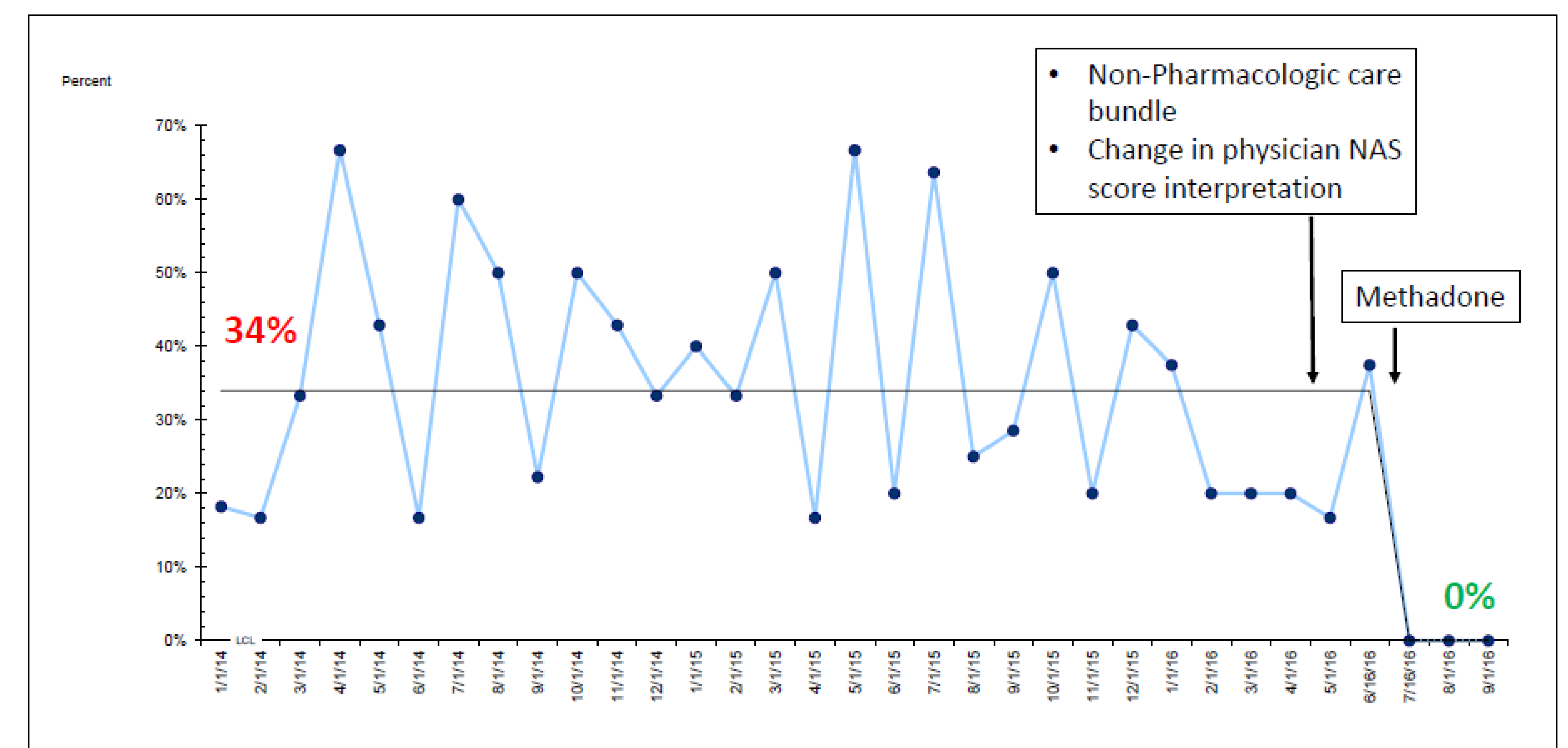
1. **Skin-to-skin:** Hold your baby skin-to-skin as much as possible. The whole family can join in the fun. Be careful though - if you are feeling sleepy, place your baby in the bassinet.
2. **Feed on Demand:** If you can, feed your baby breast milk and feed on demand. This means don't watch the clock; watch the baby for feeding cues.
3. **Calming Techniques:**
 - Swaddle: Tightly wrap your baby to help soothe them. Ask your nurses to show you!
 - Pacifiers: non-nutritive sucking
 - Shooshing
 - Slow, rhythmic up & down movements
4. **Quiet room:** keep the noise level as low as possible by limiting visitors, asking your adults friends and hospital staff to speak softly, keeping the TV volume low, talking on the phone quietly
5. **Dim the lighting** in your room.
6. **Cluster care** – ask your providers to group things together that need to be done to limit the interruptions to your baby.
7. **Medications** – Half of babies require medication to help with their withdrawal, to allow them to sleep, eat, and be comfortable.

RESULTS

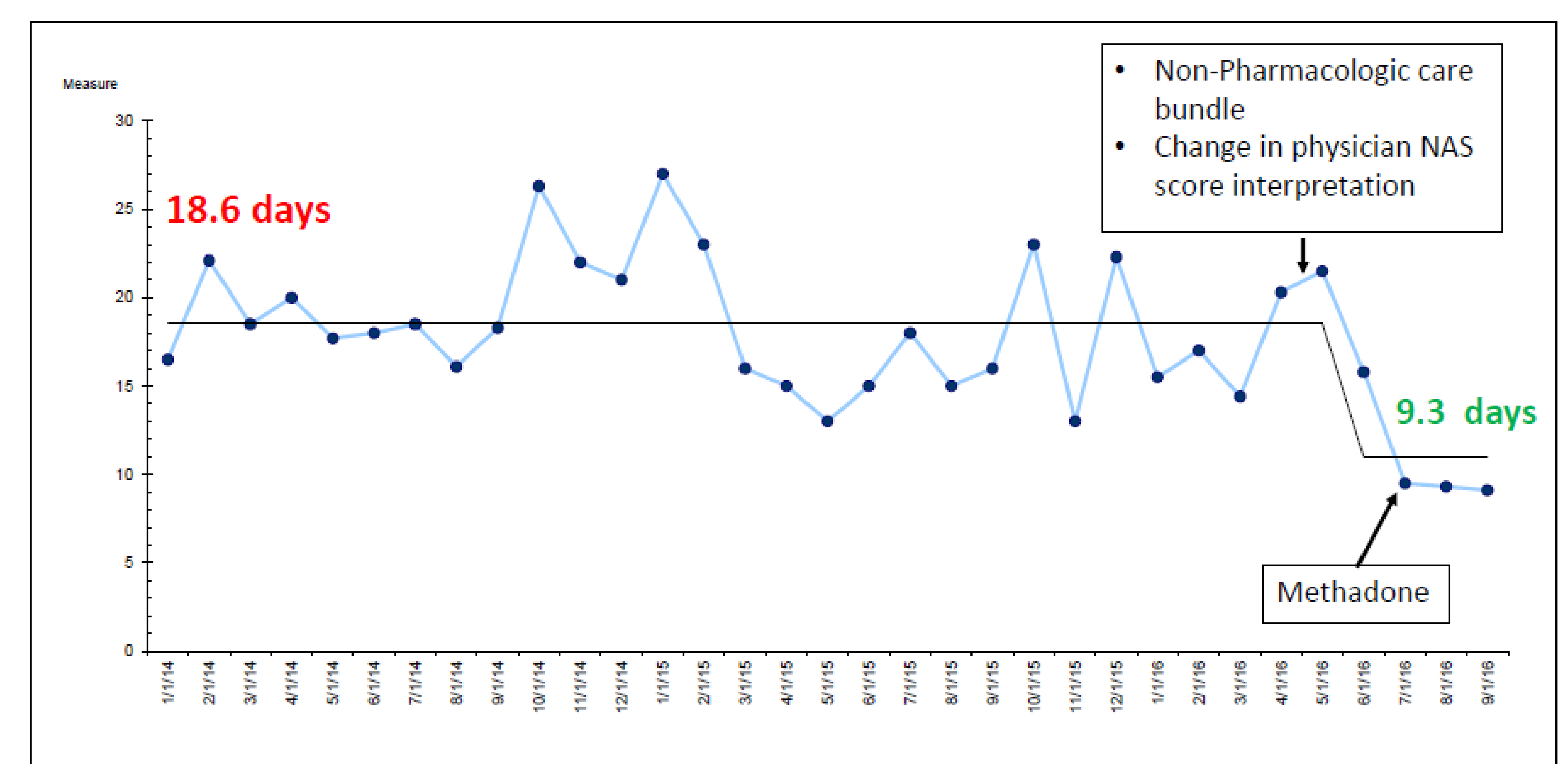
% Pharmacologically Treated of all opioid-exposed infants 2014-2016 (n=261)



Need for Secondary Medications 2014-2016 (n=217 treated infants)



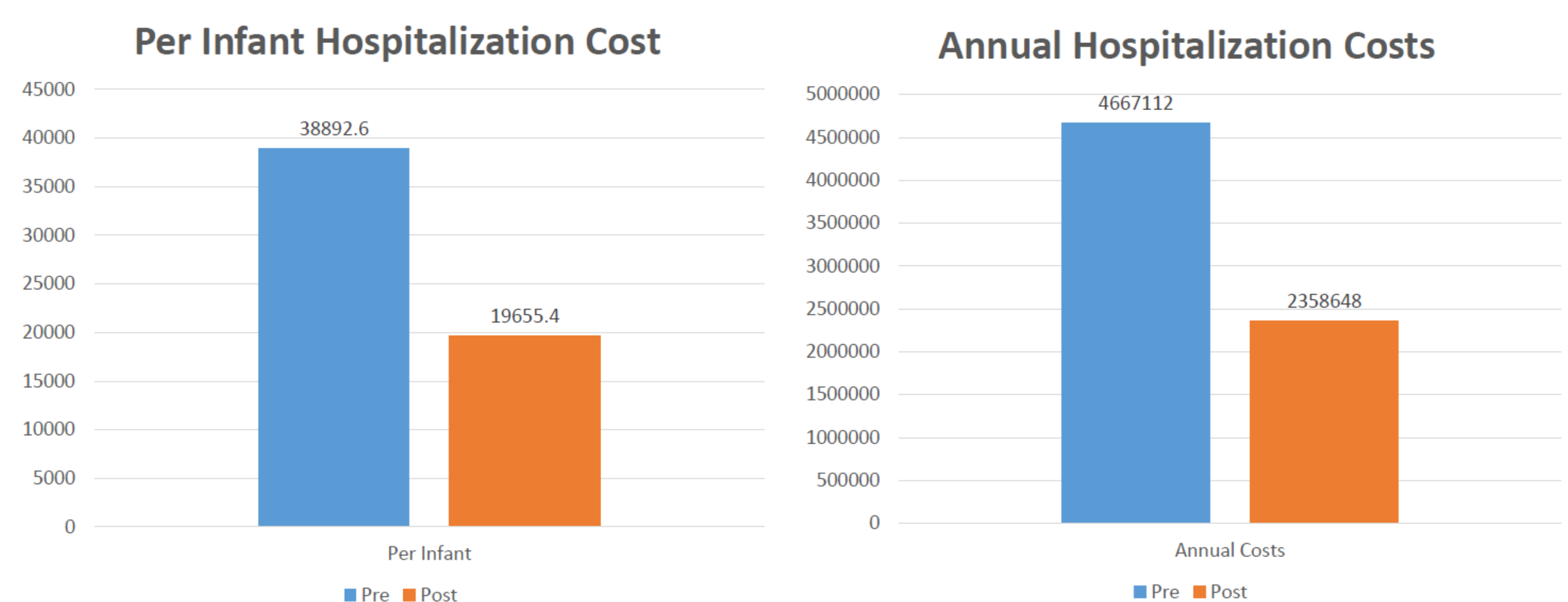
Length of Hospitalization full-term opioid-exposed infants 2014-2016 (n=261)



* **LOS for treated infants: 20.3 days (pre) -> 15.5 days (post)**

BMC Hospitalization Cost Estimation Pre and Post Intervention

\$2091 per infant per hospitalization day
120 opioid-exposed infants annually



CONCLUSIONS

- Focus on non-pharmacologic care, parental engagement, and more thoughtful NAS score interpretation resulted in a **40% reduction** in need for pharmacotherapy and **50% reduction** in LOS for opioid-exposed newborns.
- LOS for treated infants was also reduced by **25%** with no secondary agent use, suggesting benefit from the switch to methadone.

NEXT STEPS

- Dedicated volunteer cuddler program to begin in November 2016 to assist with non-pharmacologic care
- Lactation peer counselor program to begin in December 2016
- Coordinate with residential and outpatient addiction treatment programs to increase time parents spend at the infant’s bedside
- Assist parents with transportation, parking, and other barriers to being at the infant’s bedside
- Validation of new functional NAS assessment tool

Contact: Elisha.Wachman@bmc.org

Comprehensive Pharmacy Services Initiative to Improve Outcomes in Kidney Transplant Recipients

Justine E. Dickson, PharmD,¹ William R. Vincent III, PharmD,¹ Jennifer Thurman, CPhT,¹ Jean M. Francis, MD², Matthew G. Nuhn, MD, FACS³

¹Department of Pharmacy, Boston Medical Center, Boston, MA; ²Renal Section, Department of Medicine, Boston Medical Center, Boston, MA; ³Division of Transplant Surgery, Department of Surgery, Boston Medical Center, Boston, MA

Background

- Clinical pharmacy services in renal transplant centers decrease healthcare costs and improve patient outcomes. OPTN guidelines currently suggest that transplant programs provide comprehensive pharmacy services to transplant recipients.
- Previously, transplant services at our institution were limited to medication profile review for drug interactions as part of the pre-transplant eligibility assessment and post-transplant inpatient medication profile review.
- Following an OPTN accreditation visit, transplant surgery partnered with pharmacy to increase pharmacist involvement.
- The purpose of this quality improvement report is to describe the collaboration between pharmacy and transplant surgery to provide increased comprehensive pharmacy services to kidney transplant recipients

Aim

- Reach 100% provision of desired pharmacy services by July 2016

Interventions

- The setting for this project was the outpatient ambulatory care transplant clinic and inpatient medicine-surgery acute and intermediate care units at Boston Medical Center (BMC), a 496-bed, urban, academic medical center.
- We used the Model for Improvement as a framework to guide our efforts.

Figure 1: Timeline of Expansion of Pharmacy Services

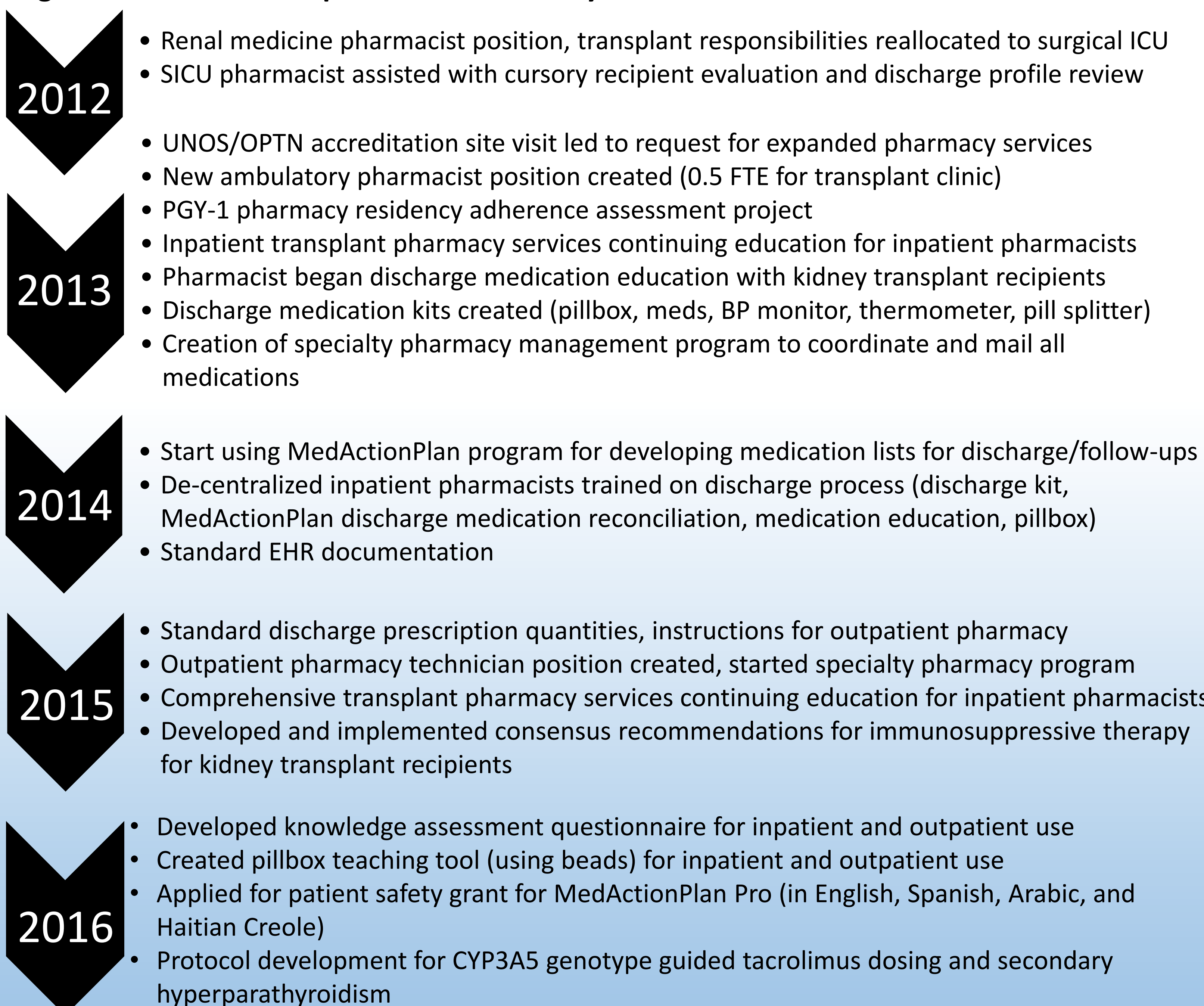


Figure 2: Discharge Transplant Pharmacy Kit



Figure 3: MedActionPlan Schedule in Spanish

Tome Estos Medicamentos	A Estas Horas				Propósito
	8am	12N	6pm	8pm	
Prograf® (Tacrolimus) 1 mg Capsula(s) Por boca	2			2	Previene el rechazo
CellCept® (Mycophenolate mofetil) 250 mg Capsula(s) Por boca	4			4	Previene el rechazo
Mycellex Troche® (Clotrimazole) 10 mg Pastilla(s) Por boca	1	1	1		Trata/previene las infecciones de hongo
Bactrim® (Sulfamethoxazole; Trimethoprim) SS = 400 mg/80 mg Tableta(s) Por boca	1				Trata/previene las infecciones bacteriales
Valcyte® (Valganciclovir Hydrochloride) 450 mg Tableta(s) Por boca	1				Previene las infecciones causadas por el citomegalovirus (CMV)
Metoprolol Tartrate 25 mg Tableta(s) Por boca	1	1	1		Controla la presión arterial; Medicina para el corazón
Aspirin 325 mg Tableta(s) Por boca	1				Previene los coágulos de sangre
Tradjenta® (Linagliptin) 5 mg Tableta(s) Por boca	1				Controla el azúcar en la sangre
Pantoprazole (Pantoprazole sodium) 40 mg Tableta(s) Por boca	1				Trata/previene las úlceras de estómago y la acidez
Proscar® (Finasteride) 5 mg Tableta(s) Por boca	1				Trata los síntomas de la próstata agrandada

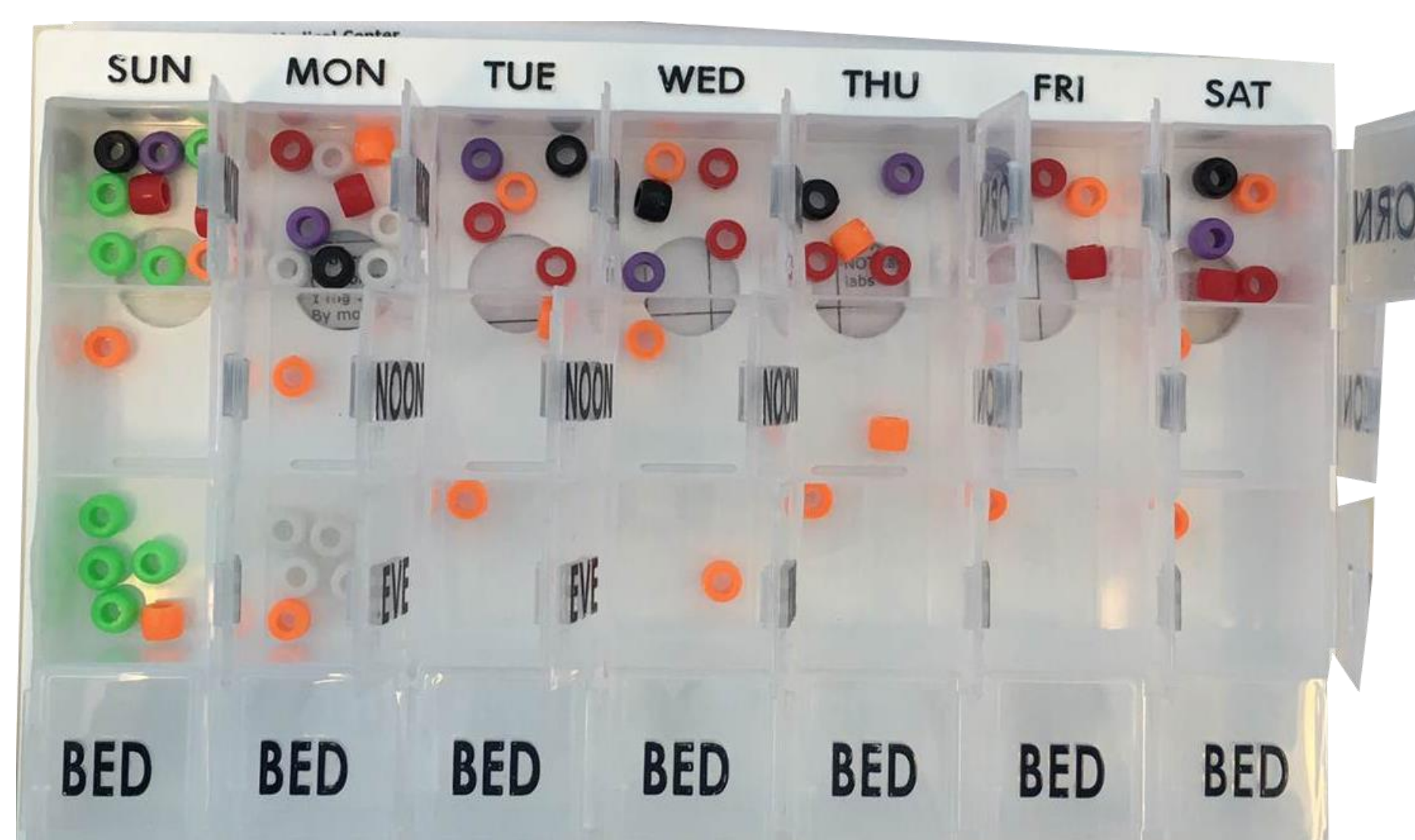


Figure 4: Pillbox Practice with Beads with Multiple Errors

- Instructions
 - Use beads in mock pill bottles and mock MedActionPlan to teach patients how to fill a pillbox independently.
- Results
 - Provide additional education
 - Get patients used to filling with a pillbox and following MedActionPlan
 - Identify barriers

Results

Figure 5: Process Metrics for Desired Comprehensive Pharmacy Services

Time Period	No. Txp Recipients	Outpatient Transplant Recipient Pharmacy Eligibility Evaluation and Education			Inpatient Post-Op Transplant Recipient Discharge Medication Reconciliation & Education		Outpatient Transplant Recipient Follow-Up	
		% Pts with Pre-Txp DDI Review	% Pts with Pre-Txp Adherence Review	% of Pts with Pre-Txp Med Education	% of Pts with Post-Op Pharmacy Care Note	% of Pts with Post-Txp Med Education	% of Pts with Post-Txp Outpt Eval	% of Pts in Specialty Program
8/12-1/13	23	61%	0%	0%	100%	0%	0%	30%
2/13-7/13	18	50%	0%	0%	78%	17%	11%	11%
8/13-1/14	17	65%	29%	12%	65%	59%	88%	65%
2/14-7/14	12	83%	50%	42%	75%	75%	75%	75%
8/14-1/15	17	88%	41%	35%	94%	100%	100%	94%
2/15-7/15	21	95%	90%	71%	100%	100%	100%	100%
8/15-1/16	14	86%	86%	79%	100%	100%	100%	93%
2/16-7/16	22	95%	91%	86%	100%	100%	100%	100%

Results

Figure 6: Pharmacy Services Provided

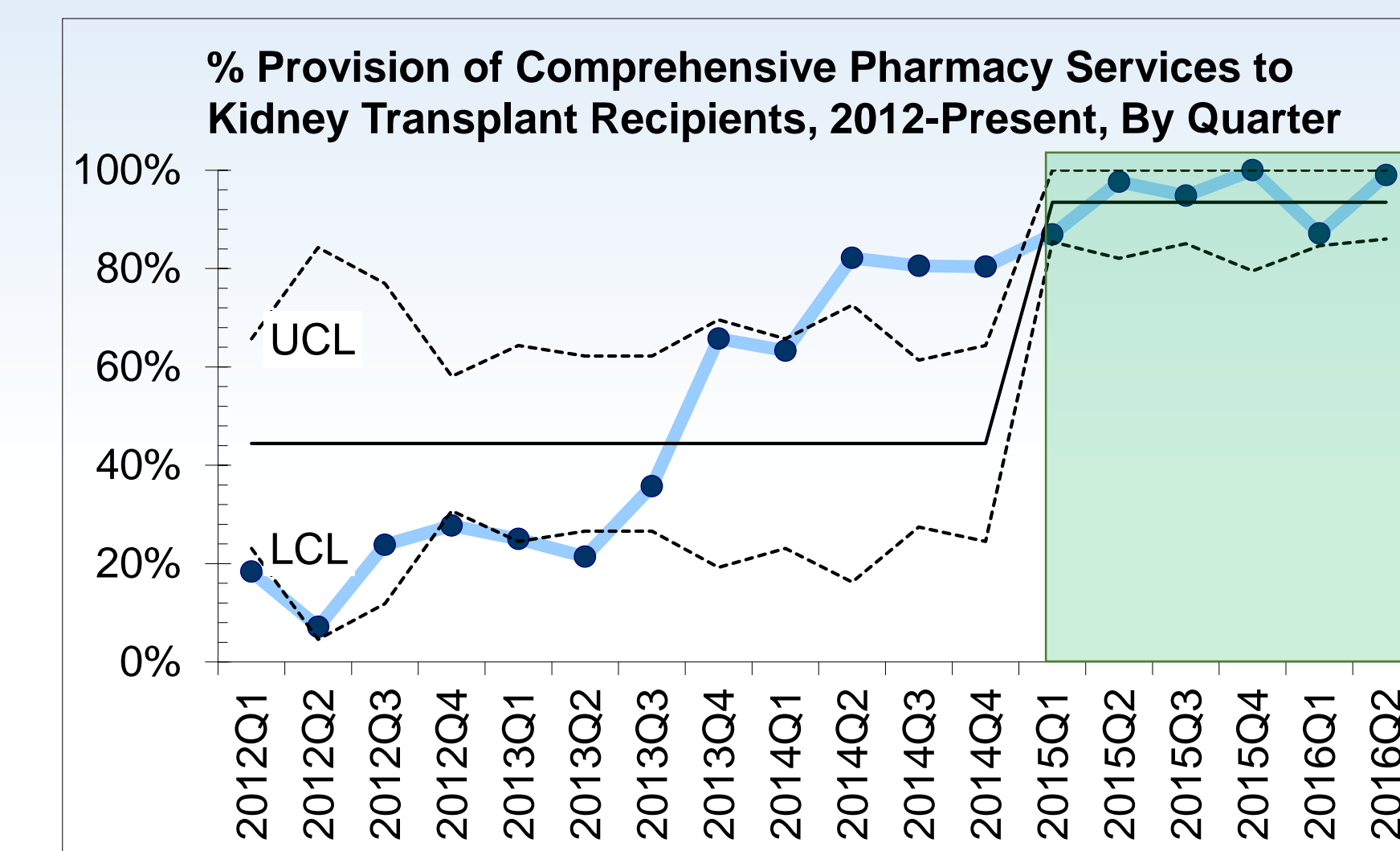


Figure 7: Hospital Length of Stay

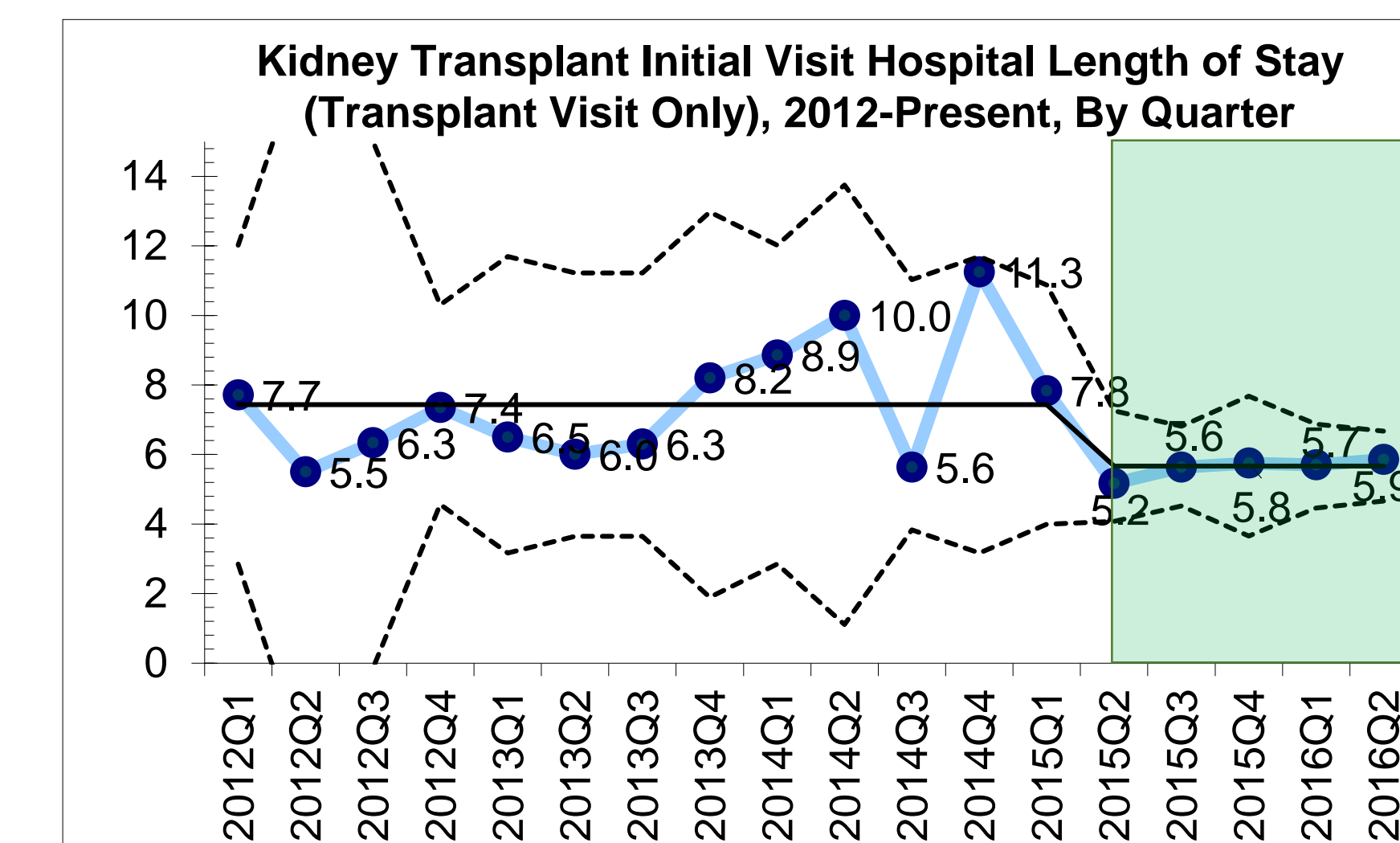
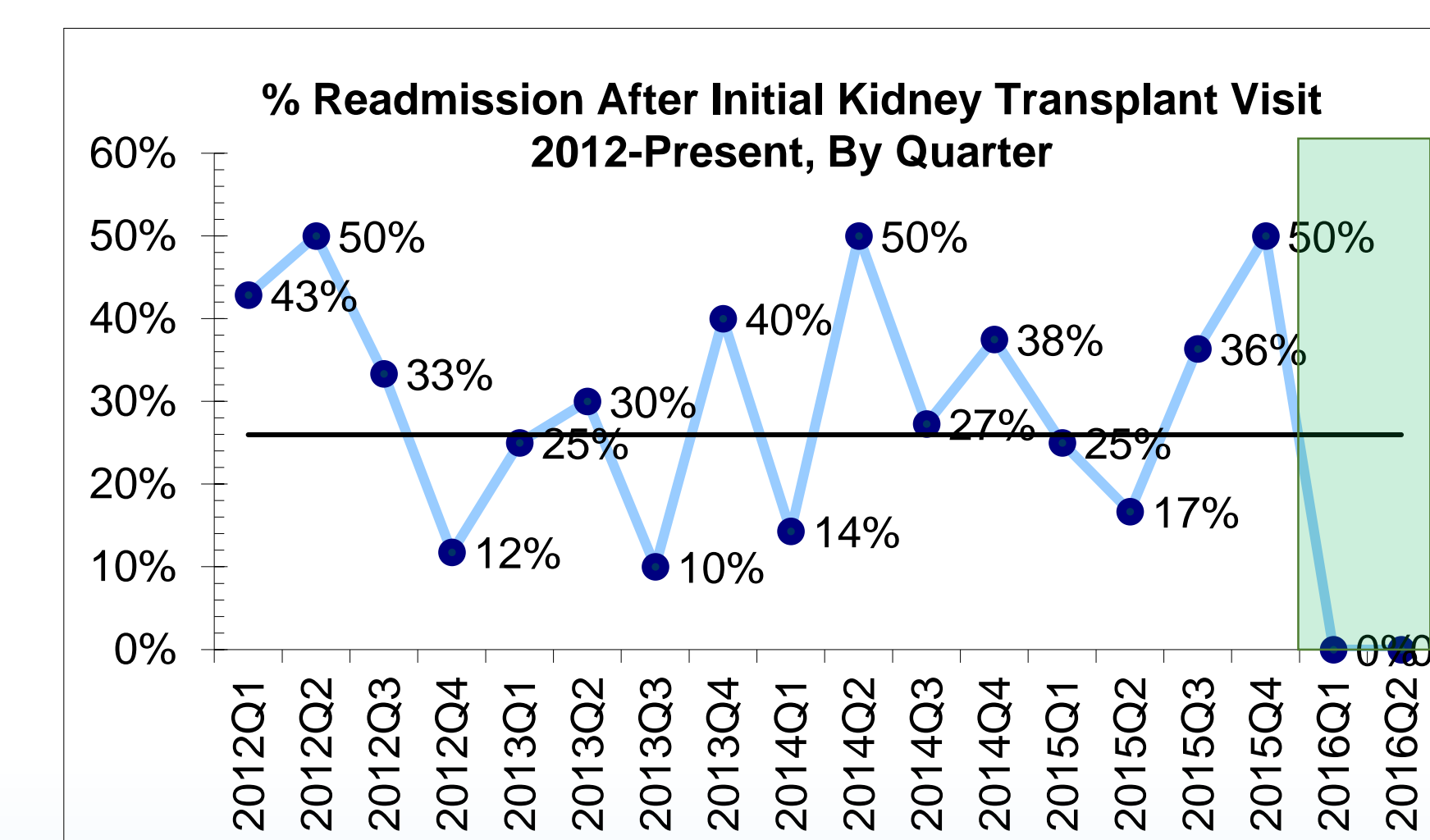


Figure 8: Readmission Post Transplant



Lessons Learned

- The addition of an outpatient ambulatory care clinical pharmacist and technician and increased involvement of inpatient clinical pharmacists improved the provision of comprehensive pharmacy services provided to kidney transplant recipients and may be associated with shorter hospital length of stay and reduced 30-day hospital readmissions

Acknowledgements

- Pharmacy-Sharon Boggs, Sylvia Chan RPH, Johnny Lam RPH, Bobby Sharith RPH
- Transplant-Sandeep Ghai MD, Amitabh Gautam MD, Linda Pelletier RN, Karen Curreri RN, Ellen Simpson RN

Improving transitions of care through implementation of IPASS handoff bundle - Multidisciplinary BMC experience

Departments Of Internal Medicine, General Surgery, Neurology, Family Medicine, Obstetrics and Gynecology, CIR House-staff Quality Council
Office of Continuing Medical Education

BACKGROUND

- Handoffs have been identified as a vulnerable time in patient care
- With ACGME duty hour restrictions, the number of handoffs have increased
- One of three sentinel events reported to JCAHO involve lack of adequate communication or errors in communication
- Structured handoff format and processes across all training program and supervision of handoffs are called for by the ACGME CLER initiative
- No structured handoff format existed at Boston Medical Center (BMC)
- Baseline survey of BMC program directors showed fewer than half of residency programs had any formal training in handoffs
- There was no process for supervision of handoffs at BMC
- In a multi-site study, implementation of the I-PASS handoff bundle was associated with a 30% reduction in preventable adverse events (NEJM 2014 Nov 6; 371(19): 1803-12.)

PROJECT AIM

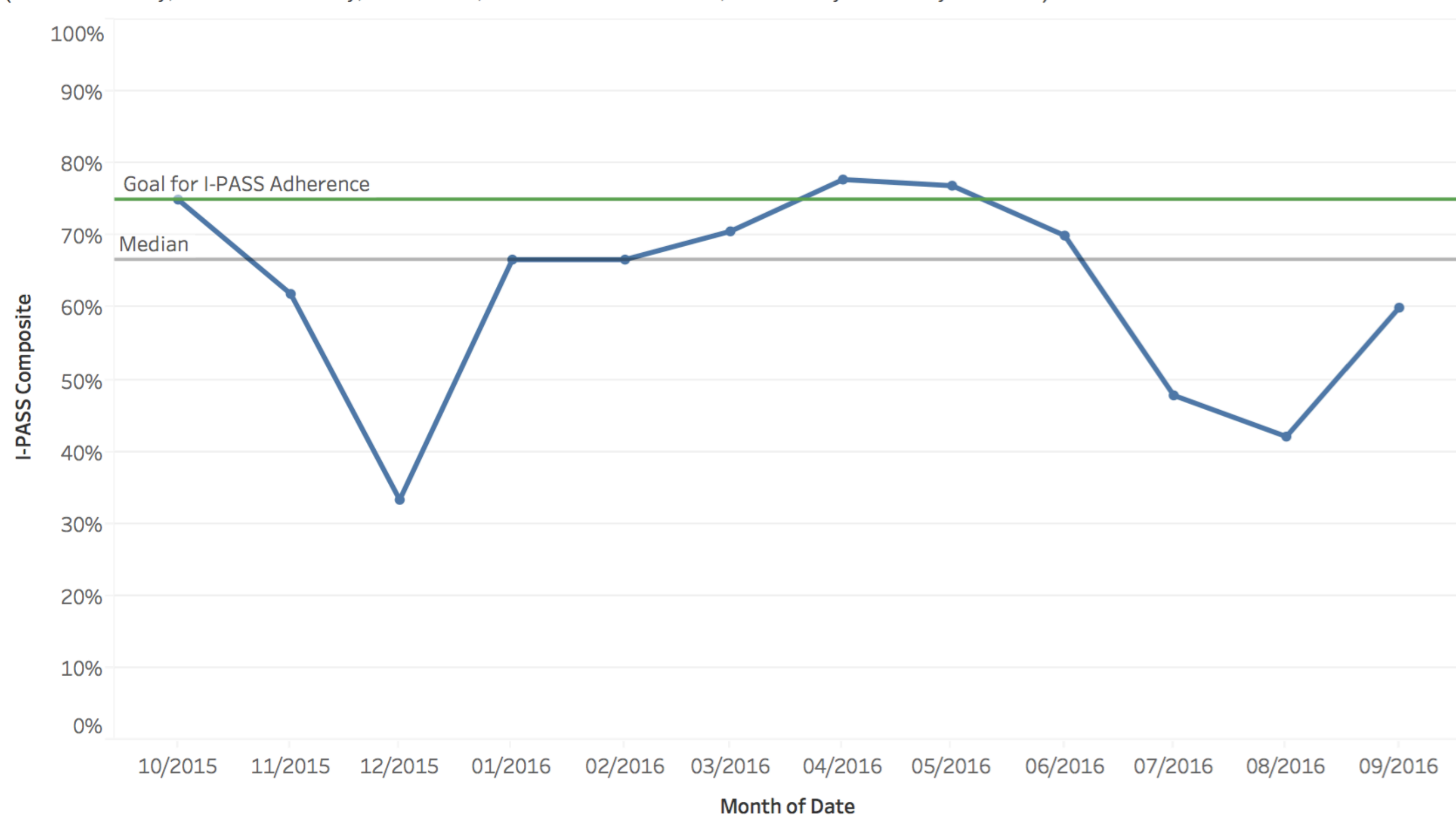
- To pilot I-PASS handoff implementation in residency programs across BMC over a two year period to transition to a new handoff culture.
- Goals for participating programs:
 - ❖All interns and residents will be trained in I-PASS
 - ❖All handoffs will utilize the Epic EMR handoff tool that incorporates I-PASS
 - ❖>80% verbal handoffs will “usually or always” use all 5 elements of I-PASS
 - ❖>80% verbal handoff quality will be rated as very good or excellent
 - ❖>80% written handoff quality will be rated as very good or excellent

PROJECT DESIGN

- Core implementation group was formed with the support of CIR and Dept. of CME and champions from Dept. 's of Internal Medicine, General Surgery, Neurology and Family Medicine.
- Funding for implementation was obtained by the BMC Patient Safety Grant
- Interns were trained in IPASS handoffs during orientation for two consecutive years.
- Residents were trained by IPASS champions during academic half-days, dedicated sessions and grand rounds.
- Front line provider and champion training conducted using SHM-IPASS curricular materials
- Handoff tool employing I-PASS format was incorporated in to the epic EMR
- Financial incentives provided to residents to observe intern handoffs and turn in assessments
- Medical students engaged in independent assessments of the objective measures like interruptions during and pace of handoffs.
- Administered quarterly surveys to assess perceived handoff quality
- Reminder emails on the 15th of each month to the house staff on service to increase supervision and observation of handoffs.

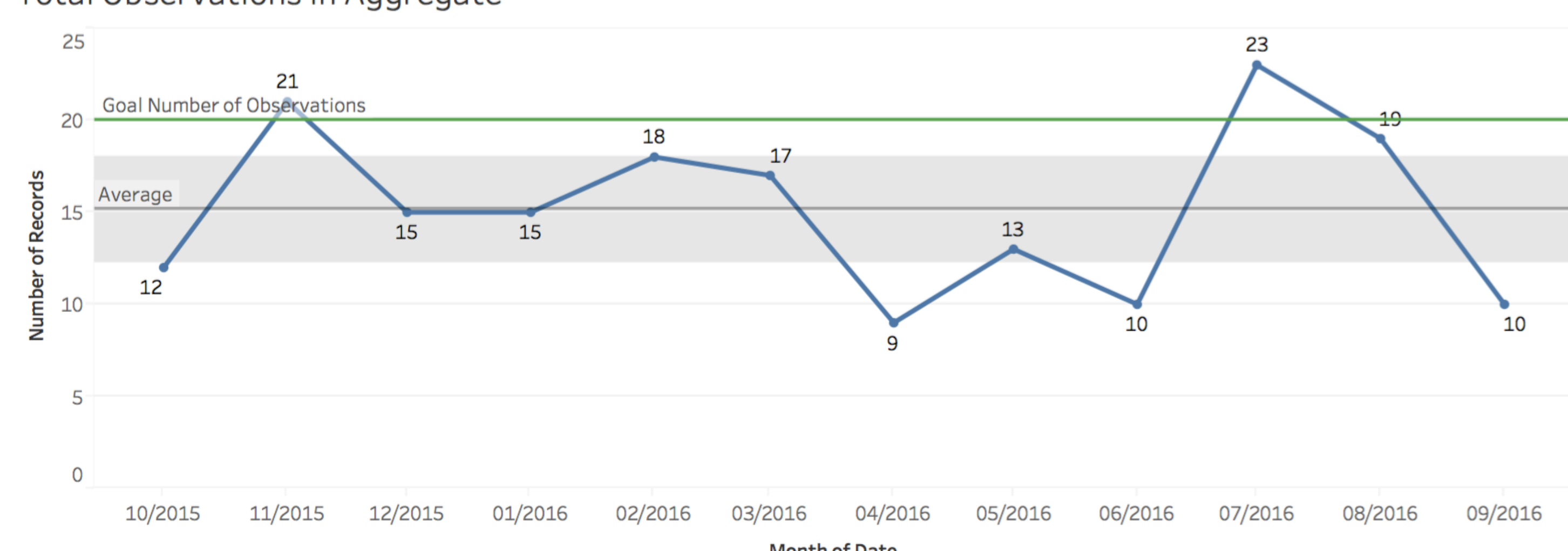
Handoffs adhering to the standardized I-PASS Format for the Giver of Handoff – Monthly Averages, BMC-Wide

Composite measure: Percentage of observed handoffs in which the Giver usually or always included all 5 elements of the I-PASS mnemonic (Illness Severity, Patient Summary, Action List, Situational Awareness, Ensures Synthesis by Receiver)

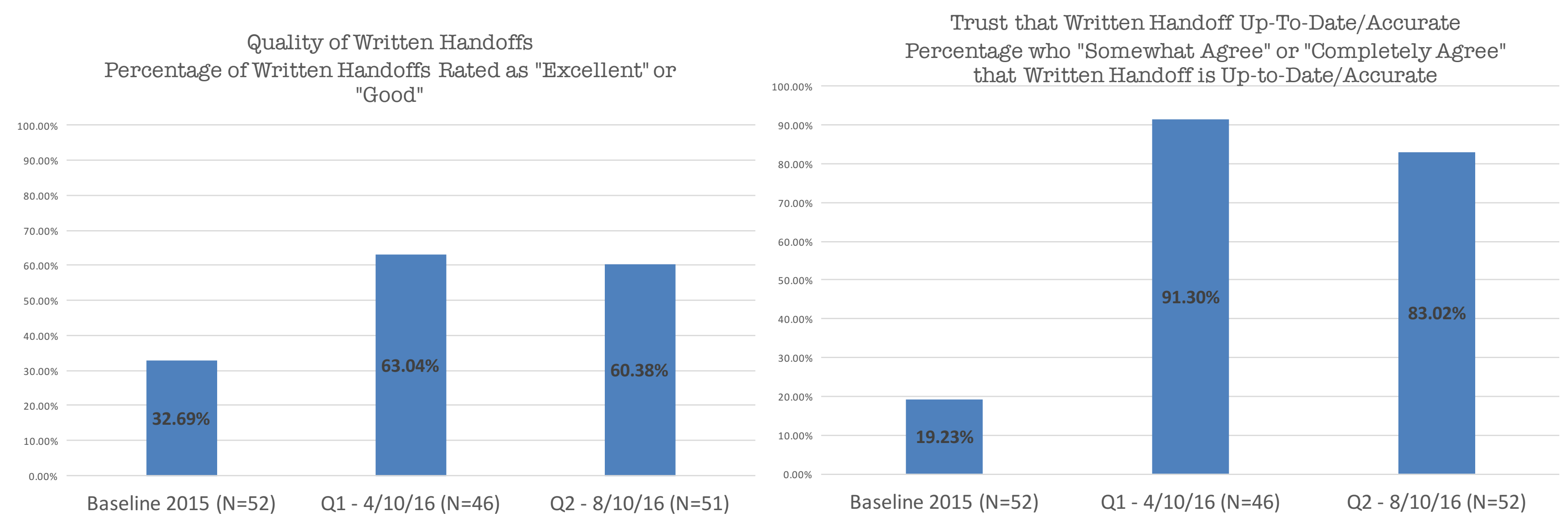
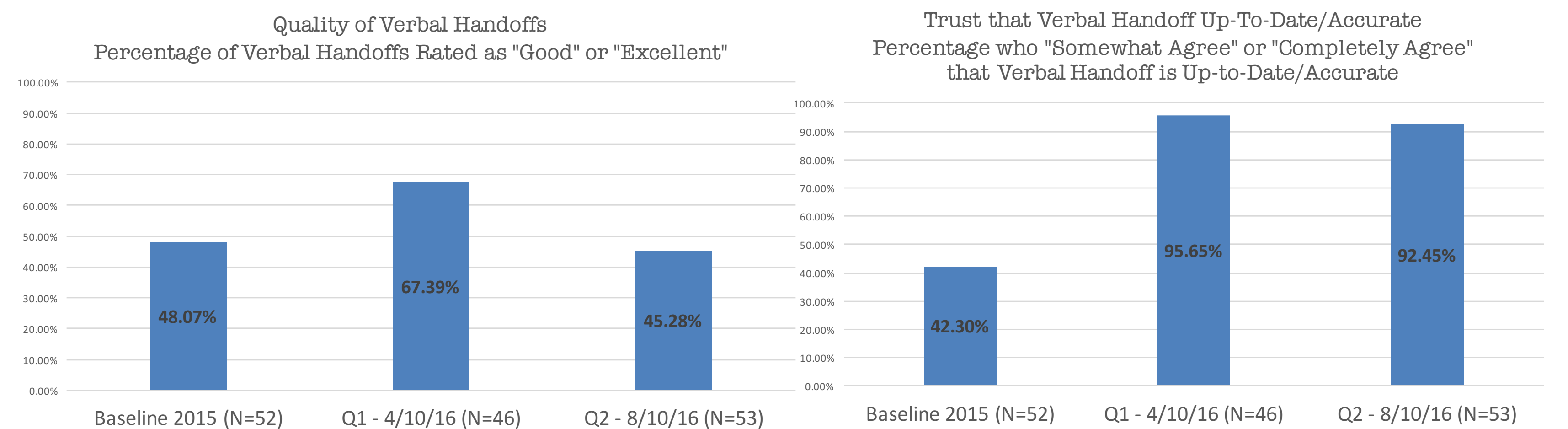
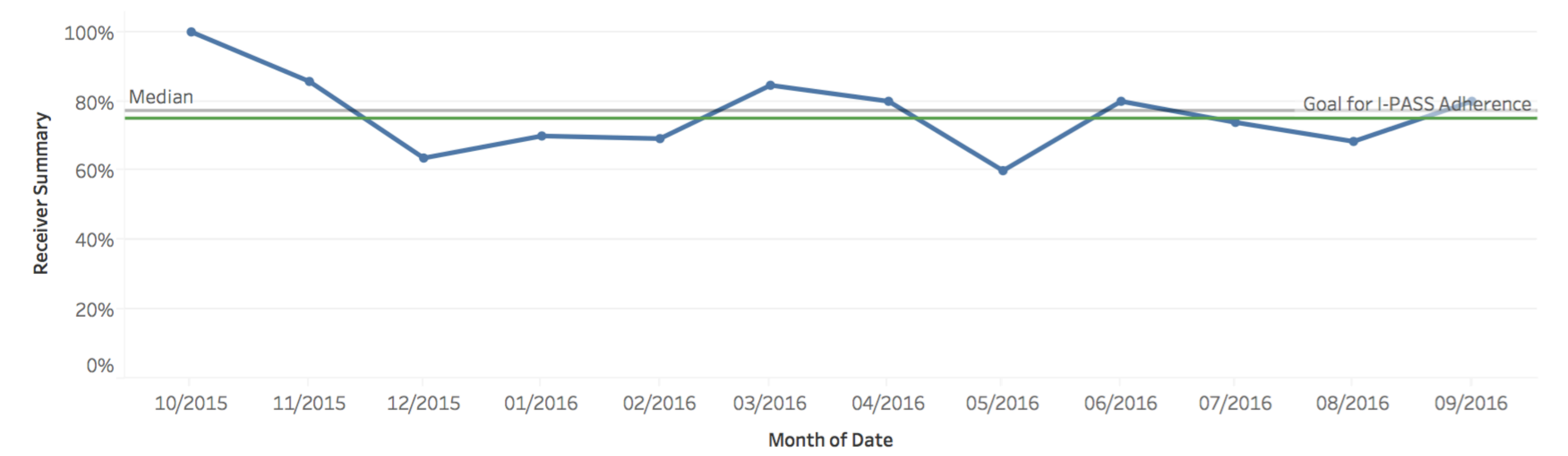


The trend of I-PASS Composite for Date Month.

Total Observations in Aggregate



Receiver Summary Aggregate: Percentage of observed handoffs in which the Receiver usually or always verbalized a concise, accurate summary of each patient (Note: Historical MP3/MP4 Study Data not included in this chart)



OUTCOMES TO DATE

- Total of 182 observations across five different residency programs over the year
- Median adherence to all 5 elements of I-PASS was 68%
- Almost all house-staff have been trained in or exposed to IPASS methodology. 124 interns and 83 residents during orientation-June/July 2016
- Faculty training in IPASS was held under the leadership of Dr. Karin Sloan and through the CME office MOC Part IV Credit was offered to faculty who meaningfully participated.
- EPIC IPASS tool being used in most of the inpatient services for signoffs
- BMC specific IPASS video was made to model ideal medical and surgical handoffs
- Variability in the observed adherence to IPASS may be due to new members in the workforce. Continued efforts to increase awareness and educating the house-staff is imperative to sustain the progress so far.
- There has been an increase in the trust that the written and verbal handoffs are accurate. However there was a variable trend in the perceived quality of handoffs. This may be because of improved training has helped identify the elements of a good sign-out

NEXT STEPS

- Plan for interview of night float residents using research assistants to gain insight into valuable information that was not relayed during handoff but may have helped with a recent over night shift.
- Include the curricular materials available from Society of Hospitalist Medicine and BMC specific videos and devise an online module for future orientations.
- Real time feedback to the various residency programs on their performance and quality of handoffs.

BMC IPASS Implementation Committee

- | | |
|--------------------------|-------------------------|
| • Aravind Ajakumar Menon | • Jackson Steinkamp |
| • Emily M Jansen | • Alex Iwamoto |
| • Simy Kabaria Parikh | • Gazal Arora |
| • A Travis Manasco | • Kalyn Reddy |
| • Emma L Trucks | • Anshul Srivastava |
| • Mary Iaculli | • Stephanie Talutis |
| • Ryan Macht | • Roxane Handal-Orefice |
| • Stephanie Le | • Melissa Markstrom |
| • Bhavna Seth | • Sefira Bell-Masterson |
| • Maggie Collison | • James Moses |
| • Juliet Fernandez | • Rhiannon Iorio |
| • Aaron Richman | |

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Amma Agyemang, Temitope Awosogba, Joseph Benedict, Doreen Edmunds, Courtney Faiella, Laura Grenier, Karen Hogan, Stephanie Le, Sheila Murphy, Joanna Perdomo, Stephanie Talutis, John Tocio, Katherine Yee, Rena Zheng
Melissa Markstrom, Nicole Lincoln

BACKGROUND

High quality health care is a leading focus within the United States today. Health care providers are increasingly responsible to demonstrate that they are providing safe, effective, and efficient care to patients. A key component to provision of high quality care is communication. Communication prevents costly errors, streamlines patient care to prevent delays, increases health care provider efficiency, and improves the patient's perception of care (Burns, 2011; Flicek, 2012). The Joint Commission has recognized that poor communication and collaboration among health care providers has been the root cause of over 70% of major medical errors (The Joint Commission, 2014). National patient safety goals have revolved around improved communication but even with this recognition, communication and collaboration strategies fall short of expectations.

Residents and front-line nurses at Boston Medical Center (BMC) identified faulty communication among nurses and physicians and have stepped forward in hopes of developing concrete strategies to improve the communication gap amongst health care providers.

Physicians use a pager system as means of communication with staff members. Many of the medical surgical floors do not have a dedicated medical team that remain on the floor on a consistent basis as the physicians and/or LIPs tend to float within different floors.

The Institute of Medicine has concluded that "a culture of teamwork is fundamental to building a learning organization and ensuring the continuity of care that yields better outcomes for patients" (Institute of Medicine [IOM], 2012, p. 9-7). With that, individuals within the organizational systems need to learn and understand ways of managing interdependence so that desired changes can be achieved.

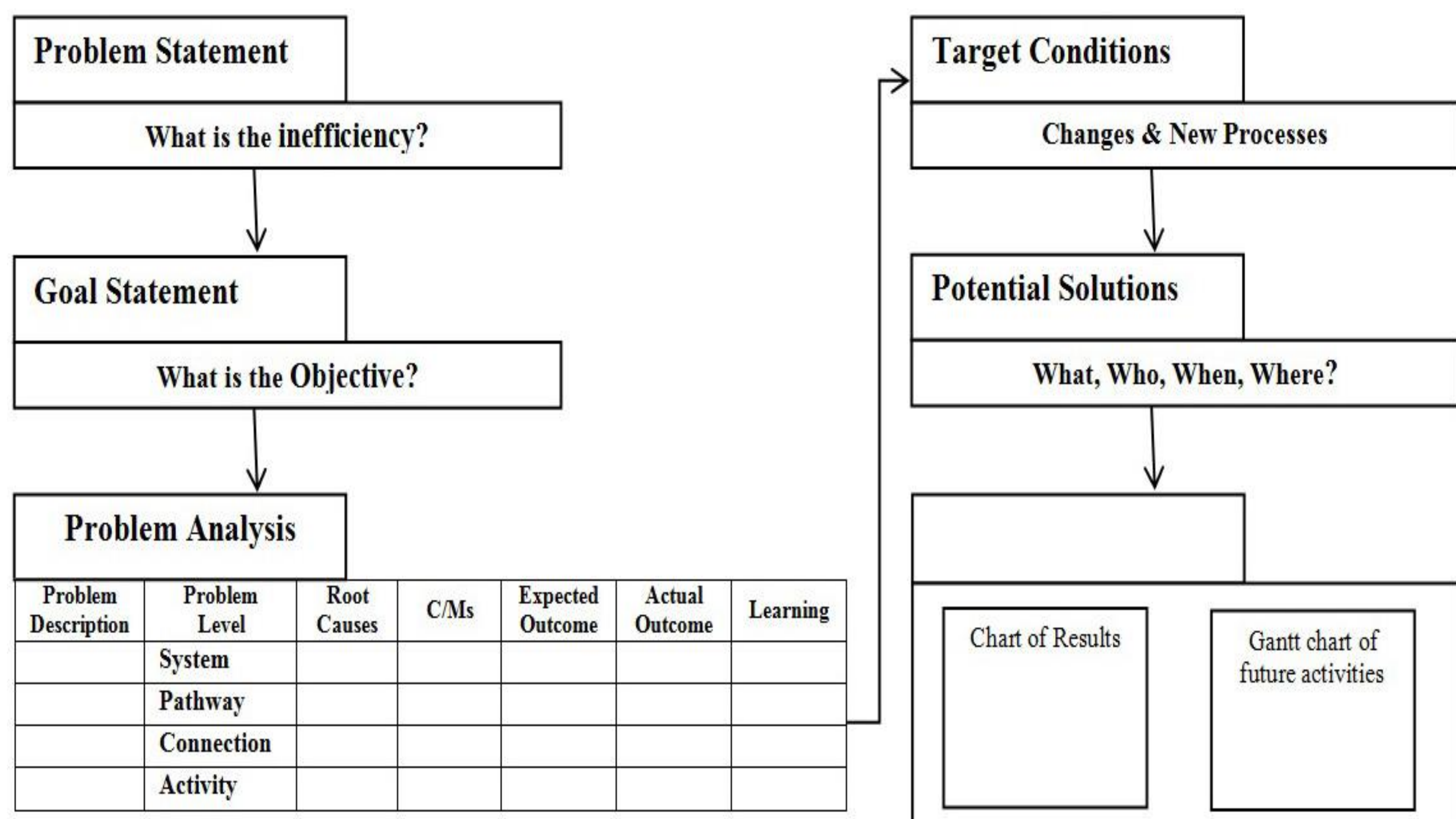
OUR TRIPLE AIM



The aim of this quality on performance project was to establish a collaboration process with specific solutions to implement to facilitate effective communication between nurses and physicians.

- Decrease preventable adverse events by 25% in FY18 as compared to FY17 in STARS incident reporting system
- Improve Patient Experience by 5 points as measured on specific HCAHPS questions
- Improve job satisfaction measured on employee engagement surveys line items about teamwork and communication by 20% total in FY 17 & 18 surveys when compared with FY16 data.

METHODS



- Staff nurses and resident physicians were surveyed to gain insight into the current state
- Scheduled meetings of stakeholders (front-line RNs and MDs)
- A3 tool was utilized to define problem, current state, perform a gap analysis, define target conditions, and propose solutions
- Solutions were grouped into 3 themes
 - Technology, system fixes
 - Team training, interdisciplinary rounding
 - Relationship building
- Solutions were prioritized and voted upon by stakeholders
- Solutions voted upon are to be fully implemented in FY 17-FY18

SOLUTIONS

Technology and System Fixes:

- Pilot phones for communication beginning in Maternal Child Health & Emergency Departments
- Pager system fix to ensure accuracy of listed covering pager IDs in EPIC
- Emergency department admission provider sign out documentation, make MD handoff visible to nurses

Team Training:

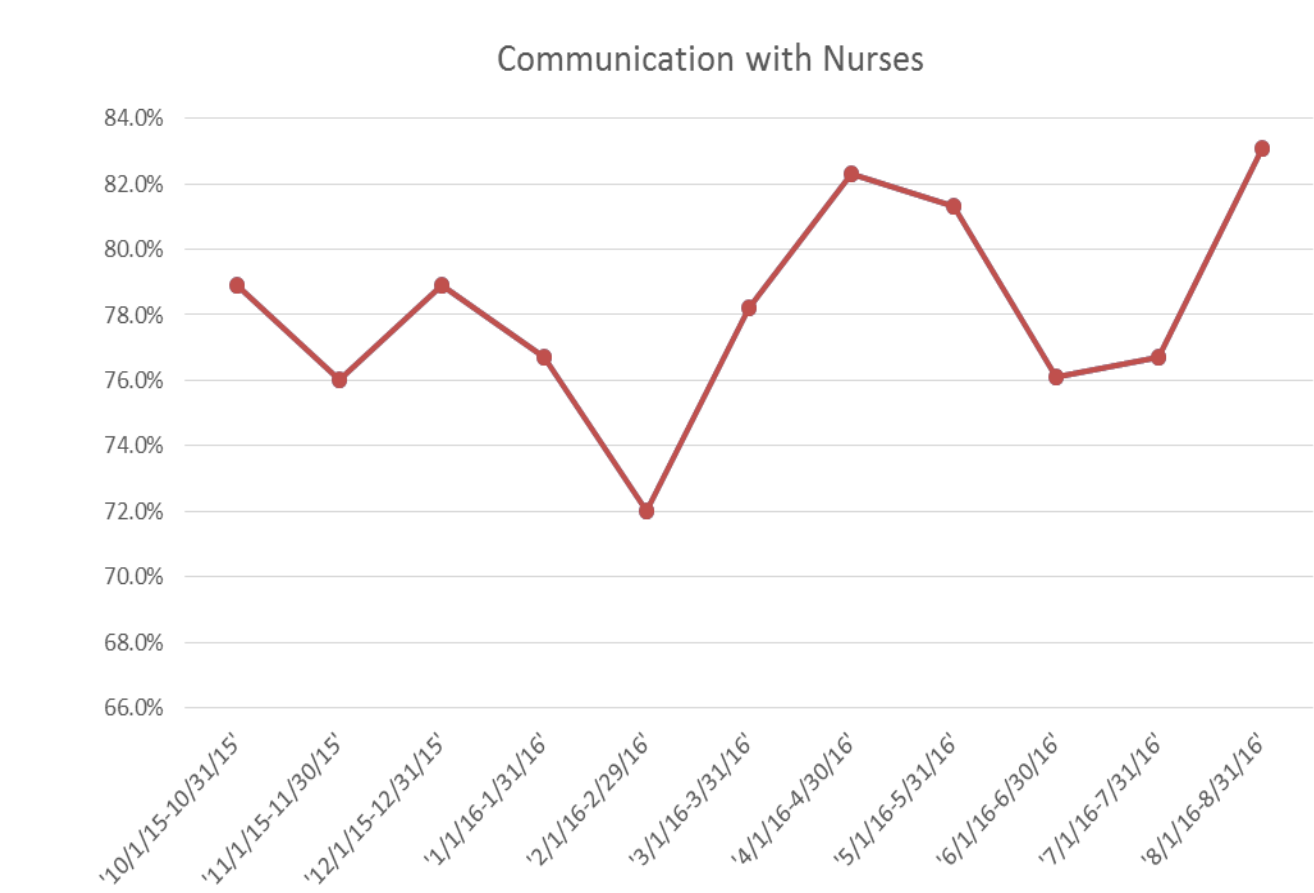
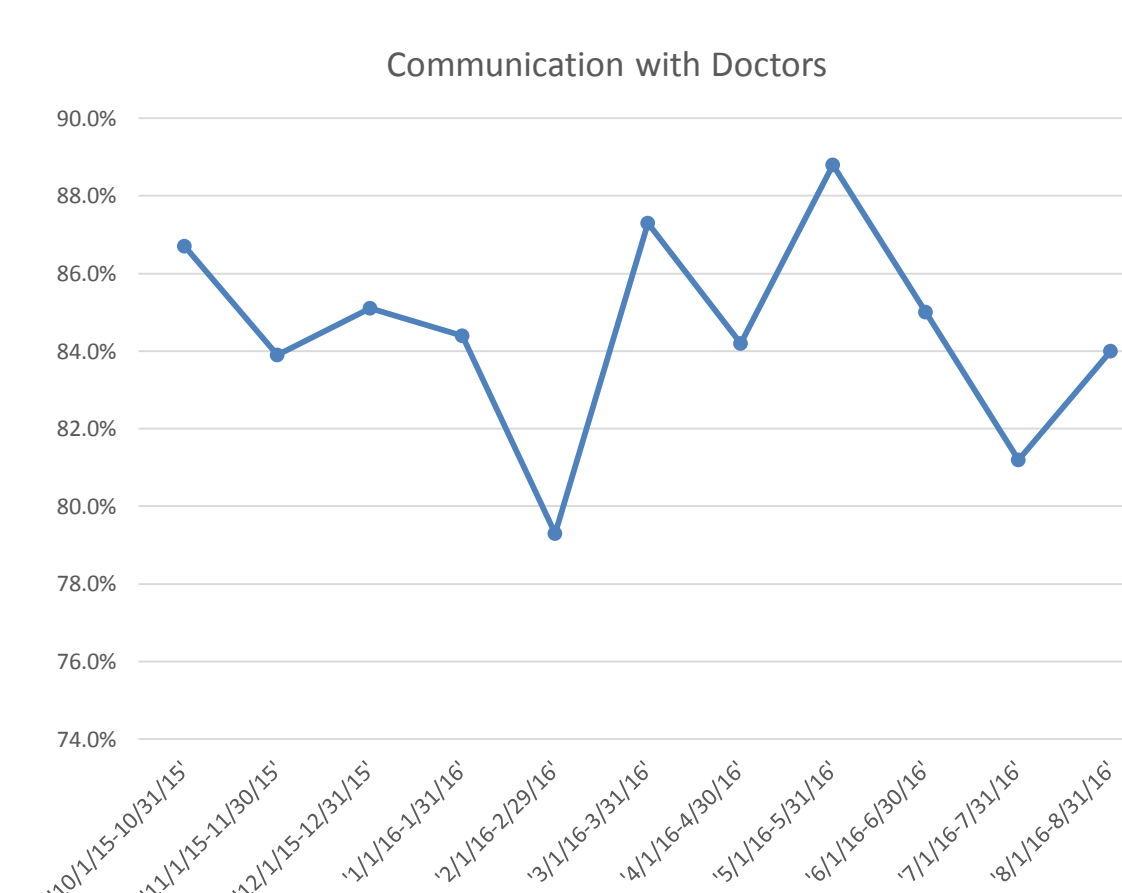
- Implementation of interdisciplinary SIM training modeled using key principles from TeamSTEPS®
- A study conducted by Gittel, Beswick, Goldmann, and Wallack (2015), identified two methods that have been shown to be valid and reliable within the health care industry in improving communication among health care providers. These teamwork intervention methodologies are TeamSTEPS® and the Microsystem Coaching Program. TeamSTEPS, has been diffused by the Agency for Healthcare Research and Quality (AHRQ) on a nation-wide scale.
- Implement interdisciplinary rounding in areas where it is not occurring, standardize core components of the process across organization
- Several studies have recognized that nurse-physician rounding have been effective in improving patient outcomes, and increasing staff satisfaction and staff retention. Rounding is described as a structured gathering of health care providers that discuss each patient and provide individualized goals for the day and the stay (Terra, 2015). Furthermore, nurse-physician rounding allows the team to work together to identify, complete, and assess the patient's plan of care (Burns, 2011). This collaborative approach can provide an opportunity that is focused on efficient, cost-effective delivery of safe care transitions, and evidence-based, quality-driven, patient care (Terra, 2015).
- Develop guidelines to create shared mental model and mutual specific expectations around provider notification and RN notification of providers when there is a change in patient condition

Relationship Building:

- Increase social capital amongst interdisciplinary teams
- Attributes of nursing culture or workplace social capital include networks of social relationships at work, shared assets and shared ways of knowing and being (Read, 2013).
- Relational social capital is an important interpersonal organizational resource that may foster workplace wellbeing and promote staff retention (Read & Lashinger, 2015).
- Nurse Leaders play an integral role in employee satisfaction, patient satisfaction and employee productivity" (MacCauley, 2015). A sense of community within a workplace will have a positive influence on the level of engagement of the team (MacCauley, 2015). "A lively, attentive, responsive community is incompatible with burnout" (MacCauley, 2015).

RESULTS

Patient experience HCAHPS data for MDs & RNs over time



1. Quality of care
We have realized improvement across many domains of the Preventable Harm Index and current performance is better than goal

Metric	FY 15 Perf	FY 16 Goal	YTD Perform
Preventable harm	1.145	1.00	0.959

- **CDIFF Infections:** Ongoing initiatives are focused on further reducing unnecessary testing and ensuring the timeliness of contact precautions to prevent spread of infection. YTD performance >25% better than goal.
- **Patient Safety Indicators:** Active case review and coding documentation has led to improvement. YTD performance better than goal except for one measure (see below).
- **Catheter Associated Urinary Tract Infections:** Continued focused on reducing unnecessary utilization/ensuring best practice adherence at bedside. Piloting of non-foley based measurement of urine output. Most recent quarter with best performance in over 3 years.
- **SBI Colon Surgery:** YTD performance improving since Q1.
- **Central Line Bloodstream Infections:** Active monitoring in place across all ICU settings. Supervision of trainees assessed and gaps addressed. Care bundles for insertion and maintenance in EPIC approved for Q3 to facilitate EPIC based reporting on best practice. YTD performance improving since Q1.
- **Perioperative PE/DVTs:** Worsening performance since start of year. Standardization of EPIC based VTE risk assessment across med-surg services in process. Focused improvement effort in Neurosurgery underway.

Employee engagement is essential to help us elevate our performance and achieve our priorities.

2016 priorities

- 1) Quality of Care
Key measure: Preventable harm
- 2) Patient Experience
Key measure: IP & OP satisfaction
- 3) Growth
Key measure: Volume

CONCLUSIONS

It is imperative to actively engage frontline staff and interdisciplinary support in the quality improvement process. This promotes staff buy-in, and contributes to success and sustainment over time. Utilizing key stakeholders provided valuable insight, which helped the multidisciplinary team reach innovative solutions. The members of this team hope that this work inspires all members of the healthcare team to work together to identify problems and develop solutions that are creative, innovative, and provide positive clinical outcomes at the bedside.

NEXT STEPS

- Continue to support implementation of identified solutions
- Trend Patient Experience, Preventable Adverse Events data, and employee engagement scores over time.

Please contact: Nicole.Lincoln@bmc.org with any questions