

2018

Scientific Proceedings of the Texas Children's Hospital's 17th Session of the Advanced Quality Improvement and Patient Safety Program

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Scientific Proceedings of the Texas Children's Hospital's 17th Session of the Advanced Quality Improvement and Patient Safety Program

Abstract

The Texas Children's Hospital's Advanced Quality Improvement and Patient Safety (AQI) Program is a six month mixed didactic and experiential learning experience designed to improve patient care, lower costs, change the culture, and develop quality leaders. As a part of AQI program participants are grouped into teams and each team completes a healthcare related Quality Improvement (QI) project. Each project demonstrates use of various QI tools including process maps, fishbone diagrams, and key driver diagrams. The projects use 'Model for Improvement' as the primary QI methodology to achieve their aim. Three or more Plan-do-study-act (PDSA) cycles are required for each QI project. The graduation ceremony is modeled after a day-long scientific meeting and each team presents a poster as well as a brief oral presentation using Power Point slides describing their project work. At the 17th AQI graduation session held on 2/9/2018, 16 teams presented their projects of which 10 submitted their posters for inclusion in this proceedings piece.

Keywords

Scientific Proceedings, Poster Session, Quality Improvement project, Advanced Quality Improvement and Patient Safety (AQI) Program

The Texas Children's Hospital's Advanced Quality Improvement and Patient Safety (AQI) Program is a six-month mixed didactic and experiential learning experience designed to improve patient care, lower costs, change the culture, and develop quality leaders. As a part of AQI program participants are grouped into teams and each team completes a healthcare related Quality Improvement (QI) project. Each project demonstrates use of various QI tools including process maps, fishbone diagrams, and key driver diagrams. The projects use 'Model for Improvement' as the primary QI methodology to achieve their aim. Three or more Plan-do-study-act (PDSA) cycles are required for each QI project. The graduation ceremony is modeled after a day-long scientific meeting and each team presents a poster as well as a brief oral presentation using Power Point slides describing their project work. At the 17th AQI graduation session held on 2/9/2018, 16 teams presented their projects of which 10 submitted their posters for inclusion in this proceedings piece. The following are the 10 poster presentations from the AQI 17th session:

- Spencer, K.L., & Vener D.F. (2018, February). *Assessing and Reducing Unattended Medications in the Operating Room (OR) Environment*. Poster presented at The Texas Children's Hospital's Advanced Quality Improvement and Patient Safety (AQI) Program. Houston, TX.
- Bala, T., Lowe, B.E., & Penn, C.V. (2018, February). *Implementing Standardized Migraine Patient Education*. Poster presented at The Texas Children's Hospital's Advanced Quality Improvement and Patient Safety (AQI) Progra., Houston, TX.
- Rochelle, D.T., Dalida-Caballes, R., Rogers, J.C., & Nguyen, G. (2018, February). *Implementation of a standardized clinical documentation form for patients with Cerebral Palsy in the TCH PM&R clinics*. Poster presented at The Texas Children's Hospital's Advanced Quality Improvement and Patient Safety (AQI) Program. Houston, TX.
- Butler, R.A., Jacobe, L., Olivares-Reed, E., & Smith, A.L (2018, February). *Improve Revenue from Continuous Glucose Monitor Initiation and Interpretation*. Poster presented at The Texas Children's Hospital's Advanced Quality Improvement and Patient Safety (AQI) Program. Houston, TX.
- Brixey, J.J., Rooney, L.L., Siders, K.L., & Thomas, L.W (2018, February). *Improving scholarly writing and Decreasing time in grading in a doctorate of nursing practice (DNP) program*. Poster presented at The Texas Children's Hospital's Advanced Quality Improvement and Patient Safety (AQI) Program. Houston, TX.
- Banuelos R, Berger A, Nguyen R. (2018, February). *Improving Timely First-Dose Antibiotic Administration to Inpatient Oncology/BMT Patients*. Poster presented at The Texas Children's Hospital's Advanced Quality Improvement and Patient Safety (AQI. Program. Houston, TX.
- Saatee, S., Johnson-Williams, J., Smart, J.R., & Ali, N.A. (2018, February). *Post-Operative Blood Conservation*. Poster presented at The Texas Children's Hospital's Advanced Quality Improvement and Patient Safety (AQI) Program. Houston, TX.
- Dean, A., Ban, K.E., & Randle, L.N. (2018, February). *Improving Antibiotic Stewardship in Discharge Prescriptions of Hospitalized Children with Urinary Tract Infection*. Poster presented at The Texas Children's Hospital's Advanced Quality Improvement and Patient Safety (AQI) Program. Houston, TX.
- Tu, D.D., Grooms, J.M., & Schuh, J.B. (2018, February). *Reducing Emergency Room Visits by Improving Education in Hypospadias Patient Families*. Poster presented at The Texas Children's Hospital's Advanced Quality Improvement and Patient Safety (AQI) Program. Houston, TX.
- Davies, B., Krueger, A.M., & Wilson, S.H. (2018, February). *Decreasing use of narcotics in postpartum vaginal deliveries*. Poster presented at The Texas Children's Hospital's Advanced Quality Improvement and Patient Safety (AQI) Program. Houston, TX.



Assessing and Reducing Unattended Medications in the Operating Room (OR) Environment

Kaonta Spencer, MSN, RN, CNOR and David F. Vener, MD

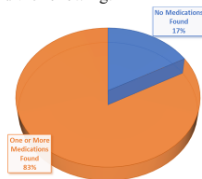


Background

The Joint Commission, CMS, DEA and other regulatory agencies have strict standards regarding the medication security. Anesthesia providers are the only clinicians in the hospital who are responsible for all aspects of prescribing, administering and disposing of medications.

Systemic breaks in the guidelines leave Texas Children's Hospital and its employees and physicians open to the threat of drug diversion and the liability of misappropriation. Additionally, disposal of unused medications may potentially impact pharmacy revenue. Events of unsecured medications have been underreported and poorly documented by OR staff. Formal training in all aspects of pharmacology management and security are lacking.

A baseline survey of Patient Care Technicians (PCTs) found the following:

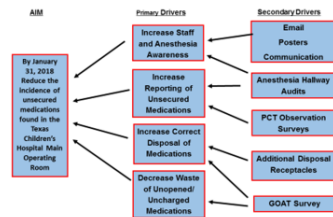


Project Aims

By Jan 31, 2018, reduce the incidence of unsecured medications in the TCH Main Operating Rooms by 50%. This will be achieved through education, increased awareness and improved reporting.

Methods

Key Driver Diagram



Our QI project measurement tool consisted of anonymous data collection by PCTs responsible for Operating Room turnover and Anesthesia set up.

The TCH Main OR was the primary study site.

The PCT direct observation tool measured the frequency and type of drugs left accessible in the MOR when anesthesia personnel were no longer in the room.

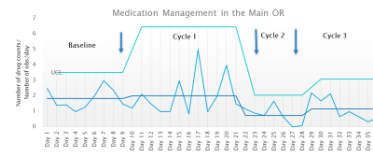
Random Hall Audits of Anesthesia Personnel were carried as part of the educational process associated with Cycles 1 and 2.

An Email survey of the OR Anesthesia leaders (GOATs) was carried out to determine what happens with unsecured medications brought to them by PCTs.

Baseline data was collected followed by 3 PDSA cycles:

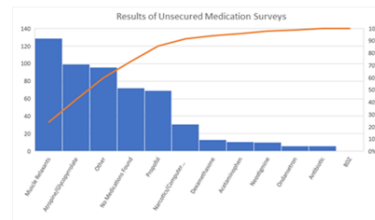
- PDSA Cycle 1: Posters on OR exits
- PDSA Cycle 2: Posters + Email
- PDSA Cycle 3: Posters + Email + Bins

Results



Data analysis showed a statistically significant decline in unsecured medications from Baseline/Cycle 1 to Cycles 2 and 3 ($p < 0.036$) after normalizing the data to account for different numbers of observations per day. Our survey showed "One or More Medications Found" to be 64% at the end of PDSA Cycle 3.

Though decreased, unsecured medications continued to be observed throughout our study period.



Discussion

We showed a significant reduction in unsecured medications, however we did not achieve our 50% reduction aim. Further efforts will be needed to reduce this ongoing occurrence.

We will be presenting this data at the next Department of Anesthesiology Quality Meeting on March 1, 2018.

The D.R.S. posters will be placed in all OR locations for system consistency.

Based upon the email survey with the GOATs, it does not appear that there is significant wastage of unopened medications so there is likely very little direct financial loss to the hospital.

A noted finding in our project was the incidence of unlocked Anesthesia Work Stations. Although we have no evidence of diversion of drugs, the potential for this to occur is significant. We will reiterate to the Anesthesia faculty the need to secure the AWS machines between and after cases.

Thank you to the MOR PCT teams who carried out our many data surveys.

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Spencer, K.L., & Vener D.F. (2018, February). *Assessing and Reducing Unattended Medications in the Operating Room (OR) Environment*. Poster presented at The Texas Children's Hospital's Advanced Quality Improvement and Patient Safety (AQI) Program. Houston, TX.



Implementing Standardized Migraine Patient Education

Thara Bala MD, Bethany Lowe MHA, Cassidy Penn M.Ed.



Background

Pediatric migraine is a common problem. The estimated prevalence of this disorder by age group is as follows: age 3-7: 1.2-3.2%, age 7-11: 4-11% and by age 15: 8-23%.

From October 1, 2016-September 30, 2017, 24% of patients seen at the West Campus and Sugar Land outpatient Neurology clinics had a chief complaint of headache or migraine.

It is also a frequent reason for presentation to the emergency center (EC) with an estimated 250,000 visits annually.

A review of evidence suggests providing educational intervention in a primary care setting can lead to improvement in patient quality of life and reduction in disability related to migraine headaches. (Smith, Nicholson, Banks 2010)

There is no standardized or consistent education provided to patients newly diagnosed with migraine at the West Campus and Sugar Land Neurology clinics.

Aim Statement

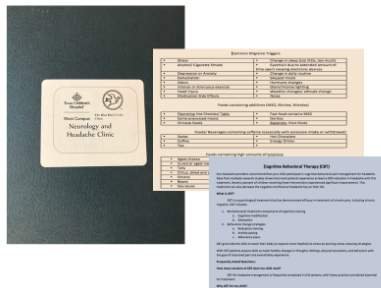
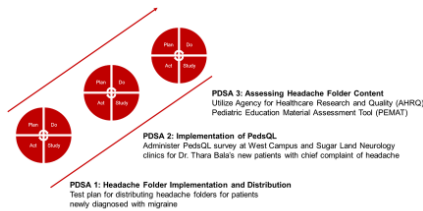
Provide patient education through a standardized headache education folder to 80% of Dr. Thara Bala's patients newly diagnosed with migraine by January 26, 2018 in both the West Campus and Sugar Land Neurology Clinics.

By providing standardized education to newly diagnosed patients with migraine, we hope to see an increase in quality of life and a decrease in Emergency Center (EC) visits for breakthrough migraine.

Methods

We created a headache folder tracking sheet to measure compliance with our aim to provide standardized education to patients newly diagnosed with migraine.

We utilized the Pediatric Quality of Life (PedsQL) survey, EC data and patient/family feedback to assess the impact of standardized education materials for patients.



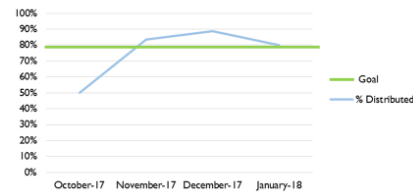
Results

The percent of distribution for the headache folder from October 2017 to January 2018 was 71.88%

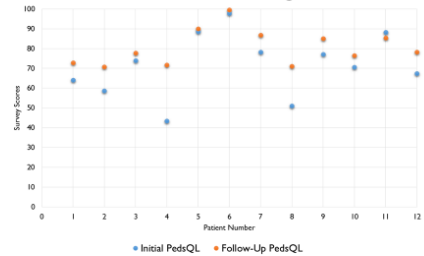
Twelve patients were given an initial and a follow-up PedsQL survey. Scores represented an overall improvement for 92% of those surveyed.

EC data for the target population show a decline in EC visits for breakthrough migraine after headache folder implementation.

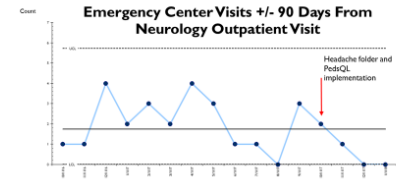
Headache Folder Percent of Distribution



Overall PedsQL Averages



Results (cont.)



Discussion

Lessons Learned:

- Standardizing migraine education relied on multiple individuals within the medical team.
- Continued support and commitment from all is necessary for sustainability and wider adoption.

Sustainability and Next Steps:

- Add a smart data element to the existing Epic smartphrase to automate tracking and reporting of headache folder distribution.
- Optimize the headache folder contents based on PEMAT evaluation.
- Designate a point person for surveillance of survey and headache folder distribution data on a quarterly basis.
- Partner with other providers at West Campus and Sugar Land to pilot the PedsQL survey, headache folder, and migraine stoplight tool for patients diagnosed with migraine.

References:

Kedia et al. Monthly Variation of United States pediatric headache emergency room visits. *Cephalgia*. 2014 December; 34(6): 473-478.
 Lewis DW. Pediatric Migraine. *Pediatrics in Review*. 2007 February; 28(2): 43-53.
 Migraine Education Improves Quality of Life in a Primary Care Setting. *Headache*. 2010. April; 50 (4): 600-612.

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Bala, T., Lowe, B.E., & Penn, C.V. (2018, February). *Implementing Standardized Migraine Patient Education*. Poster presented at The Texas Children's Hospital's Advanced Quality Improvement and Patient Safety (AQI) Program. Houston, TX.



Implementation of a standardized clinical documentation form for patients with Cerebral Palsy in the TCH PM&R clinics



Rochelle Dy, MD, Racelli Dalida-Caballes, PT, C/NDT, JaLeen Rogers, MPH, and Gabrielle Nguyen, MD
 AQI Team Coach: Shelley Ellison AQI Executive Sponsor: Tabitha Rice

Background

Cerebral palsy (CP) is the number one cause of disability in children worldwide, affecting movement and posture, and causing activity limitation. It is attributed to a non-progressive injury and disturbance in the developing brain, often accompanied by other sensory, cognition, communication, and behavior disturbances and secondary musculoskeletal complications. Treatment is complex, but with limited evidence-based treatment guidelines available.

The Cerebral Palsy Research Network (CPRN) was established to help improve outcomes through quality research initiatives, one of which is the creation of a national CP registry. TCH is an approved participating site.

TCH PM&R Clinics see more than 1200 CP patients yearly. There is currently no standardized CP clinic note, and clinical data are not stored in discrete fields that are readily retrievable for research and outcomes. CPRN developed smartforms with required data elements to be used by participating sites.

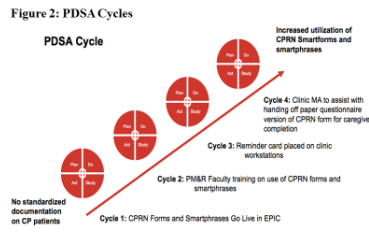
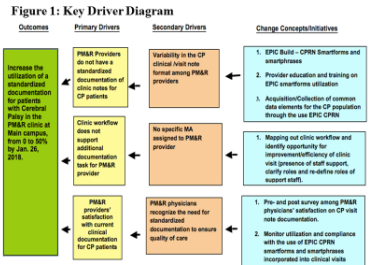
Project Aim

To implement and improve the utilization of a standardized clinic documentation form (provided by CPRN) for patients with Cerebral Palsy seen in the outpatient PM&R clinics at TCH main campus, from 0 to 50%, between November 30, 2017 to January 26, 2018.

Methods

- Two (out of 9) CPRN forms were selected for pilot implementation into TCH EPIC.
- Manual chart audits were done pre- and post- CPRN implementation to determine improvement in availability of discrete data within clinic notes.
- Current clinic workflow and processes for PM&R Spasticity clinics were mapped out.
- PM&R physicians received satisfaction surveys and provided feedback on implementation of a standardized note for patients with CP.
- Plan, Do, Study, Act (PDSA) Cycles created for implementation and utilization of clinic note standardization using CPRN forms.

Methods-continued

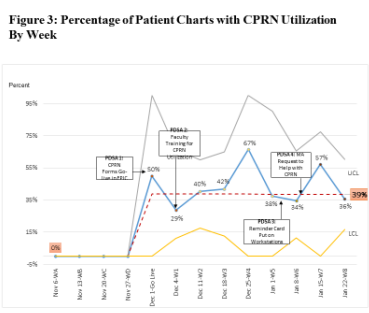


Results

The manual chart audits pre- and post- CPRN implementation demonstrated that there was a 27.23% improvement in defect rate from 38.71% to 11.48% with the use of a standardized CPRN smart form and smart phrase in Spasticity Clinic visit documentation.

Post-CPRN implementation, the 3 CP classification scales: GMFCS, MACS, CFCS, are 100% present in the standardized CPRN Spasticity Clinic visit documentation. Pre-CPRN implementation, these scales had a 52-64% defect rate in Spasticity Clinic visit documentation.

Results-continued

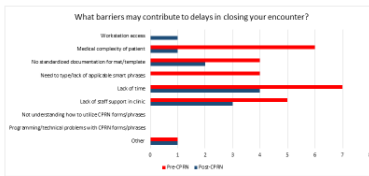


The goal of 50% CPRN utilization across TCH PM&R providers was not achieved, but there was a 39% improvement of utilization over baseline (0%).

PM&R provider time taken (averaged by day) to file CP patient note encounters utilizing CPRN elements did not change significantly compared to providers who did not utilize CPRN forms.

Providers reported openness to implementing standardized documentation with CPRN data elements during pre-survey, and were satisfied with CPRN forms in EPIC as well as education on utilization during post-survey.

Figure 4: Provider perceived barriers pre and post CPRN implementation



Discussion

Limitations and lessons learned:
 •As one of the pioneer site users, technical challenges arose requiring CPRN smartform re-programming to ensure correct data pull, and corresponding smartphrases had to be built.

•Although target utilization was not met, conversations were sparked and venues opened to jumpstart documentation standardization supported by PM&R section. Feedback on content and layout was provided to CPRN, and permission to modify smartforms/phrases and make forms more relevant to daily clinical practice and documentation was given.

Next steps:
 •Incorporate all CPRN forms, create a CP standardized visit template, and optimize CPRN smartforms within EPIC.

•Address barriers to implementation of CPRN identified by providers including: lack of time, lack of staff support in clinic, no standardized format/template, workstation access, and medical complexity of patient.

Sustainability & Growth:
 •Utilization of CPRN forms will be incorporated across all TCH PM&R locations, with extension to other subspecialty partners (Neurology, Developmental Pediatrics, Neurosurgery, Orthopedics, Therapy services, and Motion Analysis Lab).

•Opportunities for infrastructure and staff support will be explored.

Acknowledgements:
 Debi Biner (EPIC Systems Analyst); Venkatesh Kancharla (IS Applications Architect), Lei Wei (IS Database Admin), Warren Boudreau (Asst Dir Clin Outcome-Data Sup, Outcomes & Impact Service), PM&R MDs, Mark Wallace Tower 16M Staff

Rochelle, D.T., Dalida-Caballes, R., Rogers, J.C., & Nguyen, G. (2018, February). *Implementation of a standardized clinical documentation form for patients with Cerebral Palsy in the TCH PM&R clinics*. Poster presented at The Texas Children's Hospital's Advanced Quality Improvement and Patient Safety (AQI) Program. Houston, TX.



Improve Revenue From Continuous Glucose Monitor Initiation and Interpretation

Rebecca Butler, LMSW; Lynn Jacobe, MBA; Elizabeth Olivares-Reed, LMSW; Amber Smith, RDN, LD, CDE



Background

A Continuous Glucose Monitor (CGM) is a tool used to monitor blood glucose trends and make informed medical decisions. CGMs have been shown to improve diabetes care and increase time in range for blood glucoses. Our physicians, mid-level providers (nurse practitioners and physician assistants) and certified diabetes educators (CDE) frequently assist in the initiation and review of CGM downloads, but have underutilized the billing codes to receive reimbursement for their medical expertise and interpretation of data.

This project was needed to capture the missed revenue for the services patients have received. By billing for CGM initiation and interpretation, we are able to increase revenue and track the usage of CGMs to better evaluate medical interventions and patient experience.

References

- Morten Hasselström Jansen, M.Sc., Toke Folke Christensen, Ph.D., Lise Tarnow, M.D., D.M.Sc., et al. Professional Continuous Glucose Monitoring in Subjects with Type 1 Diabetes: Retrospective Hypoglycemia Detection. *Journal of Diabetes Science and Technology*. 2013;7(1):136-143
- Timothy S. Bailey, MD, FACP, FACE, ECNU. Co-Chair; George Grunberger, MD, FACP, FACE, Co-Chair; Bruce W. Bode, MD, FACE et al. American Association of Clinical Endocrinologists and American College of Endocrinology 2016 Outpatient Glucose Monitoring Consensus Statement. *Endocrine Practice*. 2016;22(2):231-261
- Vivian A. Fonseca, MD, FACE, Co-Chair; George Grunberger, MD, FACP, FACE, Co-Chair; Henry Anhalt, DO, FACE et al. Continuous Glucose Monitoring: A Consensus Conference of the American Association of Clinical Endocrinologists and American College of Endocrinology. *Endocrine Practice*. 2016;22(8):1008-1021
- Joseph A. Sierra, Mona Shah, Max S. Gill, et al. Clinical and economic benefits of professional CGM among people with type 2 diabetes in the United States: analysis of claims and lab data. *Journal of Medical Economics*. 2017; DOI:10.1080/13696996.2017.1390474

Project Aims

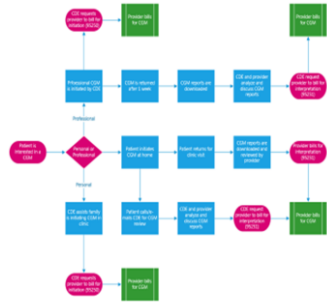
Global Aim: Capture lost revenue by increasing the consistency of documentation and billing of the initiation and interpretation of Continuous Glucose Monitors.

SMART Aim: Increase the mean utilization of CGM billing codes in Type 1 diabetes patients who are initiating/wearing CGM technology at their diabetes clinic visit at the Medical Center campus by 10% from November 5, 2017 through January 28, 2018.

Methods

Focus was at the Medical Center campus with plans to expand to all other campuses if successful.

A **process map** was utilized to understand the billing process for CGMs for both the initiation and interpretation of new and established patients.



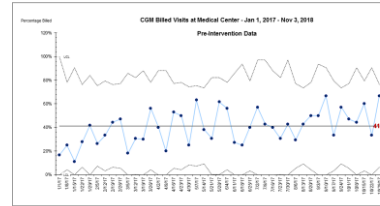
Intervention – establish a habitual behavior for providers to consistently bill for CGMs, thus capturing lost revenue for work already being rendered.

- PDSA 1: Ensure knowledge of proper order entry for CGM billing
- PDSA 2: Reinforce billing process through e-mail reminders and re-education
- PDSA 3: Increase billing of CGM initiations and reviews completed by CDEs
- PDSA 4: Manual chart review of how often providers are documenting CGM use
- PDSA 5: Provider accountability reports of actual billing percentage compliance and visual reminders of billing codes at computer stations

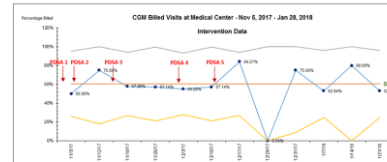
Data was tracked in real time using an EDW build by matching whether an office visit showed CGM in use and if billing code was present. Manual data was pulled for professional CGM initiations and reviews completed by CDEs sent to providers for billing.

Results

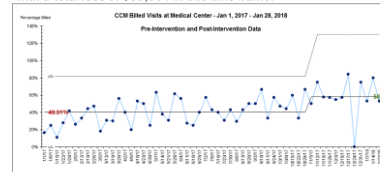
The billing process for CGM did not exist prior to January 1, 2017. Below is the percent billing of either CGM billing code, which shows a mean of about 41%. In this time frame, a total of \$29,670 of revenue was not billed.



5 PDSA cycles were completed from November 2, 2017 through January 28, 2018. During this time period, the mean of billed visits increased to approximately 61%. Compared to the baseline mean of 41%, the interventions resulted in an increase of almost 49%. This was an additional \$2,782 then what would have been billed if the trend had not changed. However, \$5,590 was lost.



Below is the total progress from the initiation of billing from January 1, 2017 through project completion, January 28, 2018, which shows an overall improvement in the mean from about 40% to about 58%—an improvement of 45% or an added \$3,457 in revenue captured. There is still a vital need for improvement with a total loss of \$35,604 in this time frame.



Discussion

- There were a variety of limitations encountered including:
 - Weeks of incomplete data (inclement weather/holidays)
 - At the time of the project, billing was optional making accountability a challenge. It has since become a section priority.
 - Provider variation in the use of established processes in documentation.
 - An EPIC update in January 2018 caused a change in the billing practice, which impacted the flow of providers learning this process.
- Of the surveys completed by providers and CDEs:
 - 50% stated their forgetfulness to bill is the biggest barrier.
 - 45% stated the reminder stickers at the computer stations were the most effective intervention.
 - 58% are more satisfied with the billing process now than before interventions.
 - 100% of providers did not feel any of the interventions had a negative impact on their ability to deliver high quality patient care.
 - 80% of the CDEs felt their workload increased.
 - 100% felt a Best Practice Alert (BPA) will be the single most effective tool to increase compliance and consistency of billing for CGMs.
- Sustainability:
 - Add the visual reminder of billing codes on each computer work station across all campuses and satellite offices.
 - Advocate for a BPA or a similar tool.
 - Generate standardized ways of documenting all CGM events for better data tracking.
- Overall:
 - Achieved improved awareness of the impact of billing for CGM.
 - There is a clear financial benefit to Texas Children's as a result of this project
 - CGM use will continue to grow amongst patients and the revenue generated will support current professional CGM use and the expansion of patient services (i.e. Support groups, scholarships for camps, etc.) and other technologies to enhance overall patient experiences.

Butler, R.A., Jacobe, L., Olivares-Reed, E., & Smith, A.L. (2018, February). *Improve Revenue from Continuous Glucose Monitor Initiation and Interpretation*. Poster presented at The Texas Children's Hospital's Advanced Quality Improvement and Patient Safety (AQI) Program. Houston, TX.

IMPROVING SCHOLARLY WRITING AND DECREASING TIME IN GRADING IN A DOCTORATE OF NURSING PRACTICE (DNP) PROGRAM

Juliana Brixey PhD, RN, Laura Rooney DNP, RN, Kathleen Siders DNP, RN, Lisa Thomas DNP, RN

Cizik School of Nursing at UTHealth

Background

National Problem

- Scholarly writing is an essential competency for doctoral level practice. There is a need to disseminate by clearly communicating the applications of new knowledge (AACN, 2006)
- A study of 704 nursing faculty members found 60% reported APA style as a moderately to very important issue in their department (Morse, 2009)

Local Problem

- “As nursing students become more diverse in their educational background and language fluency, written communication sometimes lags behind verbal skills” (Latham & Ahern, 2013, p. 615).
- The number of students admitted to the University of Texas (UT) DNP program has tripled in the past two years
- The time required for faculty to give sufficient feedback on grammar issues in doctoral students’ writing assignments has been a topic of increasing concern voiced at DNP Council meetings

Acknowledgements

AQI Project Coach: Krystle Bartley
UT Executive Sponsor: Joanne Hickey

Project Aims

By the end of the Fall 2017 semester, once Turnitin® (TII) is fully implemented:

- DNP faculty in two courses involved in this quality improvement project will report a 10% decrease in time spent on the correction of grammar in student assignments
- The students in the involved DNP courses will show a 20% decrease in grammar errors by utilizing TII
- The DNP faculty of the involved courses will utilize TII for grading 80% of assigned drafts and final scholarly papers

Methods

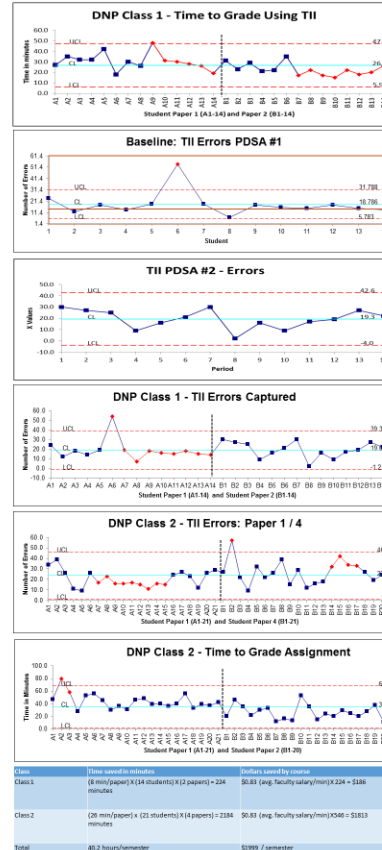
Participants The team chose two class cohorts of DNP students in which students completed written assignments. Two faculty participants with varying levels of expertise using TII agreed to participate in the project.

PDSA Cycle 1 Created a data collection form manually capture error rates noted by faculty for baseline comparison to errors found by the software.

PDSA Cycle 2 Class 1 was given an introduction to TII’s use for grammar feedback prior to their final submission. Class 2 involved a total of four written assignments, and the reporting function was open to students throughout the term.

Analysis Error rates, participation, and time spent in grading were recorded for a total of six assignments.

Results



Discussion

This quality improvement project’s intention was to:

- Develop best practice guides for implementation of the TII software solution.
- With proper set up at the beginning of a course, and reinforcement of student accountability for reviewing reports prior to submitting written work, the time spent by faculty in giving feedback on grammar mistakes will decrease even further than in this pilot.
- By increasing the focus on objective TII feedback for grammar, paired with a faculty focus on content, the quality of students’ written submissions the team expects to continue to see improvement as this project is disseminated and spreads to other courses.

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Improving Timely First-Dose Antibiotic Administration to Inpatient Oncology/BMT Patients

Rosa Banuelos PhD, Amanda Berger PharmD BCPPS, Rosemary Nguyen PharmD RPh
AQI Project Coach: Jennifer Loveless Executive Sponsor: Tabitha Rice



Background

- Fever in neutropenic patients is considered an oncologic emergency
- Risk of sepsis-related mortality is 1.6X higher in children with cancer compared with other children
- Timely administration of antibiotics decreases intensive care needs
 - Standard goal is first dose antibiotic administration within 60 minutes
 - Each 1-hour delay in antibiotic administration is associated with 18% increased mortality

Project Aim

Increase the percentage of first-dose antibiotics administered within 60 minutes to febrile neutropenic Oncology/BMT patients by $\geq 10\%$ from baseline by February 8, 2018

Methods

Data for this project was obtained for patients seen at TCH main campus from October 18, 2017 to February 8, 2018 who met the following inclusion criteria:

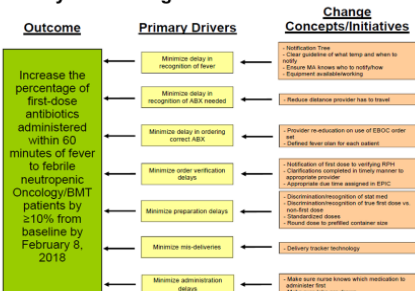
- ANC < 500
- Fever ≥ 100.4
- Oncology or BMT patients
- New start of antibiotics on 8th or 9th floor
 - Antibiotics administered: ceftriaxone, cefepime, vancomycin, piperacillin-tazobactam, or metronidazole

The primary sources of data were:

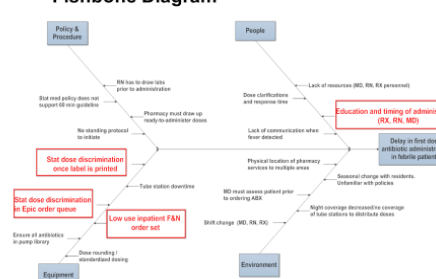
- Epic
- DoseEdge

Methods (Cont.)

Key Driver Diagram



Fishbone Diagram



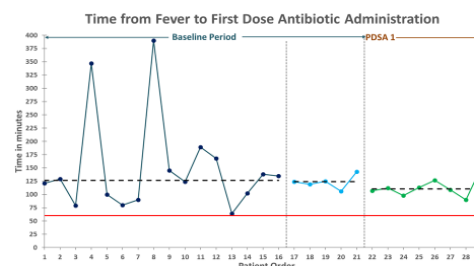
PDSA 1: Pharmacy education initiated (January 18)

- Heightened awareness on sepsis guidelines
- Re-educate to P&T STAT turn around time expectations
- Update pharmacist scheduling guidelines for first dose antibiotics

Results

Steps	Time in minutes, median (IQR)	
	Baseline	Post PDSA
Temperature to Physician Order	20 (15-45)	17.5 (10-32.5)
Physician Order to Pharmacy Verification of Order	11 (3-15)	7.5 (3.5-12)
Physician order time to Scheduled Due Time	82 (65-108)	72.5 (58.5-77)
Pharmacy Verification of Order to Dose Ready for Delivery	17 (12-26)	23 (18-39.5)
Dose Ready for Delivery to Administration Time	65 (37-92)	47.5 (38-68.5)
Fever to Administration time	124 (102-143)	110.5 (102.5-120)

IQR, Interquartile range (25th-75th)



Discussion

- 12.6% relative improvement in time from fever to antibiotic administration
- Specific project AIM not met after first PDSA cycle
- Stakeholder collaboration necessary to achieve goal
- Second PDSA will focus on expanding education beyond pharmacy

Future Direction



Baseline

- Median time from fever to antibiotic administration was 124 minutes, IQR=(102-143)
- Two patients required escalation to higher level of care

Post PDSA 1

- Median time from fever to antibiotic administration decreased to 110.5 minutes
- Variability decreased as indicated by IQR=(102.5-120)
- Improvement in pharmacist adherence to first dose scheduling guideline (Baseline: 82 minutes vs. Post-PDSA: 72.5 minutes)
- Zero patients required escalation of care

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Post Operative Blood Conservation

Siavosh Saatee, MD

Janika Johnson-Williams, RN, BSN, MHA, MBA

Joshua Smart, RN

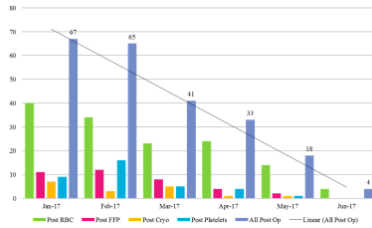
Nadia A. Ali, BS



Background

The Society of Thoracic Surgeons (STS) reports that **29.1%** of patients post coronary artery bypass graft (CABG) and valve surgeries receive blood products. **31.1%** of patient's at BLSMC receive blood products post operatively for (CABG) and valve surgeries. Like-hospitals are currently averaging **31.7%** for the same surgeries.

BLSMC Isolated CABG Postoperative Blood Product Utilization 2017



Outcomes

- To decrease the percentage of blood products by 10% for post-operative CABG and valve surgeries from 31.1 to 27.99%
- Increase hospital ranking based on STS reporting

Key Drivers

- Postoperative lab values
- Hemodynamic stability
- postoperative clinical outcomes
- Personnel
- Patient history
- Process
- Blood products utilized

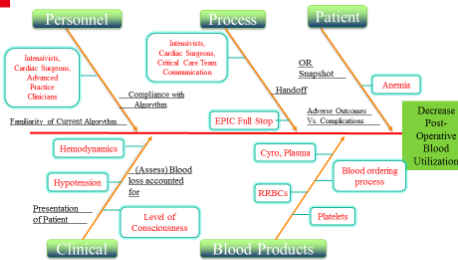
Change Concept

- Post cardiac surgery transfusion Algorithm
- Provider report card

Project Aims

By January 10, 2018, Baylor St. Luke's Medical Center will reduce the number of blood products utilized for post CABG and valve replacement surgeries by 10% from 31.1% to 27.9%.

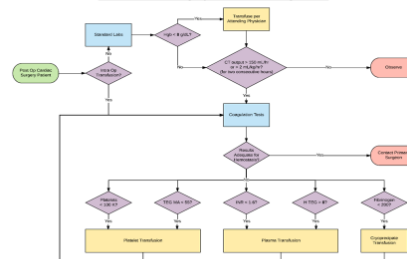
Cause and Effect Diagram



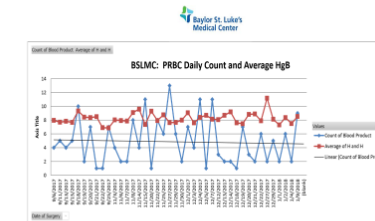
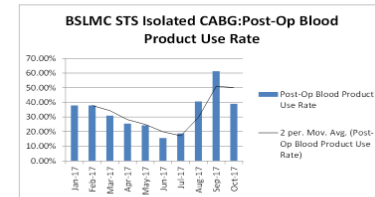
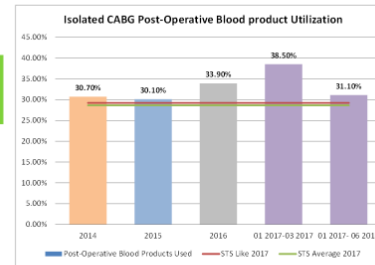
Methods

- Institution of BSLMC Cardiovascular Surgery Blood Utilization Algorithm
- Key stakeholders in the cardiovascular, critical care units, and operating rooms were identified and educated
- Worked alongside blood utilization champion for units involved – CVCC and CVICU
- Conducted multiple unit based and provider education along with read and signs for both units
- Weekly data review to identify and discussed opportunities for improvement

Post Cardiac Surgery Transfusion Algorithm



Results



Discussion

- Barriers to project include: culture of practice, failure of providers to adhere to algorithm, patient hemodynamics, new and rotating mid-levels to the ICU service line, training and education.
- The next step will be to track the percentage of blood products utilization in valve surgeries and provider score cards across the service line.
- It is crucial to include members across the entire healthcare discipline; ranging from the quality department all the way to the surgeon. Disseminating data promptly for graphical representation and early education to hospital staff is equally important for outcomes.
- We have learned that the best way to change practice is by presenting the evidence that represents why a change is needed.

NEXT STEPS:

- The project will be sustained by continuing staff education. All new employees and providers will be provided the algorithm upon start.
- Continual weekly data extraction from Quality Management team.
- Quarterly institutional data to national benchmark (STS) comparisons.
- Once concurrent improvement has been shown, the algorithm will be disseminated to all Critical Care service lines.



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Saatee, S., Johnson-Williams, J., Smart, J.R., & Ali, N.A. (2018, February). *Post-Operative Blood Conservation*. Poster presented at The Texas Children's Hospital's Advanced Quality Improvement and Patient Safety (AQI) Program. Houston, TX.



Improving Antibiotic Stewardship in Discharge Prescriptions of Hospitalized Children with Urinary Tract Infection

Andrea Dean, MD, Kathryn Ban, MD, Lindsay Randle, MBA

Section of Pediatric Hospital Medicine, Department of Pediatrics, Baylor College of Medicine, Texas Children's Hospital



Background

- Improving antibiotic prescribing practices, i.e. antimicrobial stewardship, is critical to combat the dangerous rise in antibiotic resistance [1]
- Quality improvement initiatives can improve antibiotic prescribing outside of formal antimicrobial stewardship programs [2]
- Antibiotics for urinary tract infection (UTI) can and should be targeted to culture results [3], however, UTI is often treated with broad-spectrum antibiotics when not indicated

Aim

Improve the percentage of Pediatric Hospital Medicine (PHM) patients discharged on appropriately narrow oral antibiotics for UTI based on urine culture sensitivities from baseline of 60% to goal of 90% from September 2017 to March 2018.

Methods

- Chart review of PHM patients with positive urine culture discharged with oral antibiotics for UTI
- Culture organism sensitivity and discharge antibiotics were compared. Prescribing was classified as appropriate if antibiotic was from the narrowest tier to which the organism was sensitive (Figure 2)
- PHM providers surveyed to identify key drivers and plan interventions (Figure 1)
- Measures:
 - Outcome: percentage of patients prescribed appropriately narrowed antibiotics
 - Balance: readmission rate, prescribing of antibiotic to which organism resistant

Interventions

Figure 1. PDSA interventions focused on PHM provider awareness and education

- Presentation of baseline data to PHM providers**
- PHM section email education based on survey results**
- Badge cards with oral antibiotic spectrum & UTI-dosing to PHM providers**
- Distribution of badge card to PHM resident rotators**

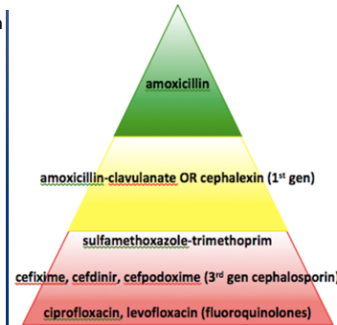


Figure 2. Badge cards included the 3 tiers of oral antibiotics used for data analysis, listed narrowest to broadest

Results

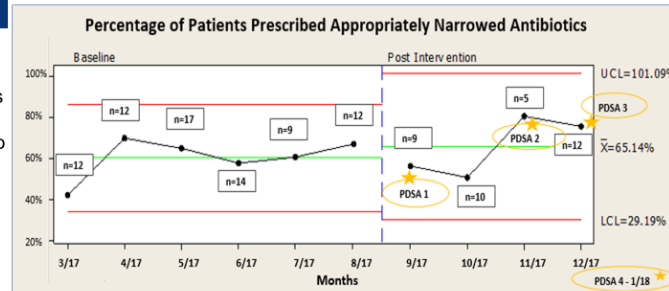


Figure 3. The baseline rate of appropriate antibiotic prescribing was 60% overall (72% at main campus and 55% at community sites). Rates had risen to 80% in 11/2017 and 75% in 12/17

Summary

Discussion:

- Survey results indicated that PHM providers viewed antimicrobial stewardship as important
- Key drivers included provider misperception of antibiotic spectrum and inconsistent dosing recommendations
- Increasing rates of appropriate prescribing suggest that provider education and awareness can improve antibiotic stewardship

Limitations: Small sample size, time restrictions

Future Steps:

- Data collection is ongoing to reflect more recent interventions
- The next intervention will provide individuals with feedback about their prescribing practices
- Data analyzed for 6 months post-intervention to assess for sustainability

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Reducing Emergency Room Visits by Improving Education in Hypospadias Patient Families

Duong Tu, MD; Jag Grooms, MPA; Jessica Schuh, PA-C



Background

Patient families have voiced concern regarding receiving inadequate or conflicting information about the post-operative expectations and care for patients undergoing hypospadias surgery.

We believe this increases phone calls, emergency room (ER) visits, and possibly readmissions after hypospadias surgery. This concern and uncertainty directly affects patient satisfaction and quality of care.

Multiple studies have examined the relationship between written information and patient satisfaction, anxiety, and outcomes, and have shown that written information improves satisfaction and anxiety associated with surgical management, as well as improved information integration.

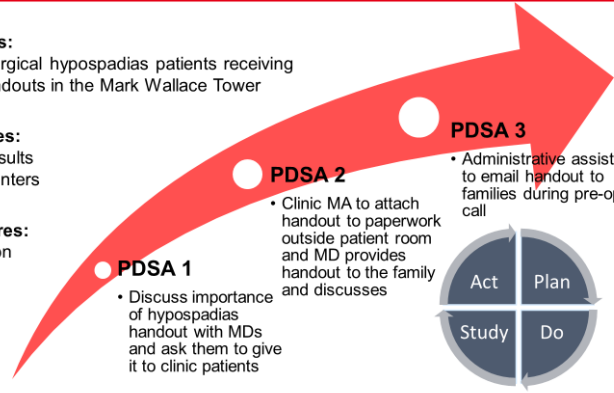
Our baseline data revealed a **20% handout utilization rate**. We also found that post-operative patients visited the ER at a rate of **14%** and called the Urology service at a rate of **92%**.

Project Aims

Our goal is to increase patient and family education to decrease post-operative ER visits by **25%** for patients with hypospadias seen in the Mark Wallace Tower Urology Clinic by February 1, 2018.

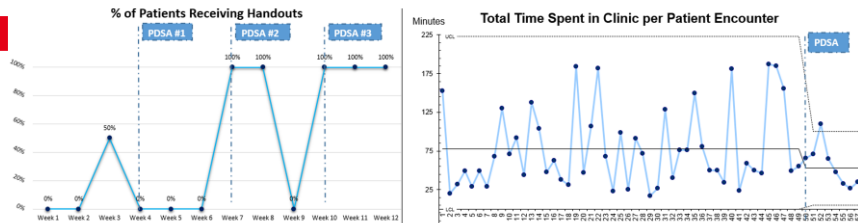
Methods

- **Process Measures:**
 - Percent of pre-surgical hypospadias patients receiving informational handouts in the Mark Wallace Tower Urology Clinic
- **Outcome Measures:**
 - Patient survey results
 - Telephone encounters
 - ER visits
- **Balancing Measures:**
 - Clinic visit duration



Results

- Informational handout dissemination increased from **20% to 100%**
- The clinic visit duration per hypospadias patient appears to be decreasing from an average of **77 minutes to 52 minutes** with the increase in handouts



- Preliminary data also shows a decrease in telephone encounters of **50%** and EC visits of **100%** per post-operative patient

Discussion

Decreased ER visits post-operatively leads to increased value to the patient, better quality of care, decreased costs for the hospital, and an increased US News & World Report Score.

Lessons learned:

- There is significant "lag time" between the realization of post-operative outcomes based on pre-operative modifications.
- This underscores the importance of long-term data collection.
- Survey-based data collection has a low participation rate regardless of method (email vs telephone or text)
- A reliable method of incurring change often also requires automation of a process, when possible, to account for human resistance to change.

Future Directions:

- Data collection for this project will be ongoing as patients continue to have their surgeries over the next 6 months and beyond.
- The patient data will continue to be evaluated for improvement in the number of ER visits and patient/family satisfaction.

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Tu, D.D., Grooms, J.M., & Schuh, J.B. (2018, February). *Reducing Emergency Room Visits by Improving Education in Hypospadias Patient Families*. Poster presented at The Texas Children's Hospital's Advanced Quality Improvement and Patient Safety (AQI) Program. Houston, TX.



Decreasing use of narcotics in postpartum vaginal deliveries

Beth Davis MD, Angel Krueger MS RN, Shae Wilson JD



Background

Increasing rates of opioid abuse and dependence continue to be an issue nationwide.

Of the more than 33,000 opioid-related deaths in the United States in 2015, 1,186 were in Texas.

Opioid use during pregnancy has increased in recent years. The percentage of Medicaid-enrolled women who filled an opioid prescription during pregnancy increased 23% during 2000–2010.

After a vaginal delivery it is estimated that 31% of patients receive narcotics. Nearly 12% of patients go home with an outpatient prescription.

Currently, there are not any ACOG guidelines for management of postpartum pain.

Additionally, opioid usage for postpartum patients at the PFW is not currently measured and providers and nurses have autonomy in administering narcotics for pain.

Project Aims

Decrease the use of narcotic medication in patients with an uncomplicated vaginal delivery by 3%. For our project, we will focus on all vaginal deliveries with $\leq 2^{\text{nd}}$ degree perineal tear only.

Methods

- Goal to decrease unnecessary use of opioids in an inpatient setting without increasing problems with uncontrolled pain or decreasing patient satisfaction.
- Texas Children's Pavilion for Women postpartum Mother Baby Units (MBU).
- Plans for on-going monitoring of inpatient narcotics doses administered.

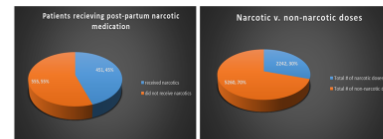
PDSA Cycles:

- PDSA Cycle #1: Create awareness regarding the opioid crisis and educate postpartum nurses on 12th floor & 14th floor MBU about our AQI project and goal.
- PDSA Cycle #2: Update existing postpartum pain management order set to promote more judicious use of opioid medications.
- PDSA Cycle #3: Create awareness regarding the opioid crisis and educate Physician leaders about our AQI project and goal so that they could educate the teams (WSH, POGC, BCM).
- PDSA Cycle #4: Present at OB/Gyn Department meeting and let providers know that we would begin to provide data on usage at a provider level.

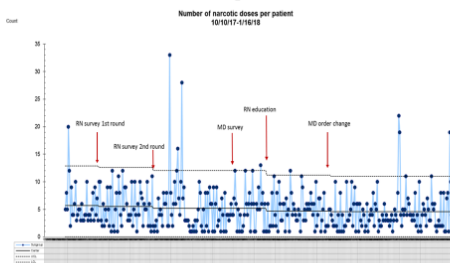
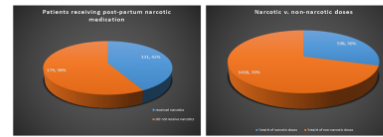
Results

The charts below show our pre and post intervention results for the use of narcotic after uncomplicated vaginal deliveries at the PFW. The Shewart chart shows the number of narcotic doses over time along with our interventions.

Use of narcotics for post partum pain management SEP-DEC 13, 2017



Use of narcotics for post partum pain management DEC 14 - JAN 2018



Discussion

- EPIC order set was changed so that a higher pain score was required for nurses to offer opioids.
- Ongoing education across the board for physicians, nurses, nurse practitioners and residents. Goal to incorporate patient expectations for pain management in the office setting.
- Ongoing monitoring of inpatient opioid use on MBU after vaginal delivery with narrowing focus to provider level.
- No immediate financial impact, but possible long term lowered healthcare costs if opioid addiction is prevented.
- Safer patient care will be provided and lower the risk of inappropriate opioid use in the outpatient setting.
- Lesson learned is that it is hard to change provider prescribing habits, particularly providers in private practice settings. Ongoing monitoring at a provider specific level and communication to providers that are outliers in their prescribing habits will be needed for sustainability.
- Possible next steps will be to take opioids off the order set completely so that providers have to enter it manually after receiving a best practice prompt in the EMR.

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Davis, B., Krueger, A.M., & Wilson, S.H. (2018, February). *Decreasing use of narcotics in postpartum vaginal deliveries*. Poster presented at The Texas Children's Hospital's Advanced Quality Improvement and Patient Safety (AQI) Program. Houston, TX.