DEPARTMENT OF MEDICINE

Quality Improvement & Patient Safety (QIPS) Committee

QUALITY IMPROVEMENT POSTER SESSION

POSTERS

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QIPS: Improving the Transition from Inpatient to OPAT Care in the ID Fellows' Clinic

Milena Ruvin, Flonza Isa, Daniel Eiras, Kolta Salto, Benjamin Eckhardt, John Humphrey, Ole Vliegmeier
Laura Kirkman, Matthew Simon, Elizabeth Alexander

Introduction

• Since 2009, the volume of patients on outpatient parenteral antibiotic therapy (OPAT) has more than doubled at New York Presbyterian/WCMC, making OPAT a new standard in the treatment of infections requiring prolonged therapy.
• Benefits of OPAT include decreased hospital stay lengths, reduced costs, and improved patient satisfaction.
• However, the transition from inpatient to home requires complex multidisciplinary coordination, with the potential for adverse outcomes in the absence of adequate patient education and follow-up.
• Despite increased patient volume, no structured care transition process currently exists at NYP/WCMC.

Project Objectives

This study aims to assess the extent to which improved discharge planning—through an enhanced care coordination intervention involving patient education administered by a medical student before discharge—improves follow-up adherence in the ID Fellows' Clinic.

Methods

• The follow-up adherence rate of 163 OPAT patients was measured during the control period, January-June 2013.
• During the intervention period, July-August 2013, the project targeted 28 OPAT patients on the NYP/WCMC ID consult service, to be discharged to home.
• The intervention included:
  1. (1) collecting outpatient care plans from various healthcare providers;
  2. (2) scheduling clinic appointments with fellows who provided inpatient care;
  3. (3) administering a “patient agreement,” including information on antibiotic type, duration, ID physician/appointment date, home delivery service, and associated side effects;
  4. (4) offering education on the importance of follow-up and monitoring symptoms.
• A prospective chart review was performed to assess adherence within 6 weeks of discharge.
• Results were entered into an excel database.

Results

Control Period Rate of OPAT Follow-Up Adherence
OPAT Patients’ Adherence Rate Post-Intervention

![Graphs showing adherence rates]

• 82% (23/28) of OPAT patients with intervention adhered to initial ID Clinic follow-up within 6 weeks post-discharge.
• 69% (112/163) for OPAT patients from control period adhered to initial ID Clinic follow-up (Chi-square for comparison of pre- and post-intervention = 2.08, p = 0.14).
• Furthermore, historical adherence rates indicate that only 73% of total patients adhered to ID Clinic follow-up in 2011.
• 92% (11/12) OPAT patients adhered to recommended additional follow-up visits.
• 52% (12/23) of those who adhered to follow-up required OPAT regimen alteration (prolongation, discontinuation, drug change).

Lessons Learned

• The ID Clinic is the primary practice responsible for providing care to OPAT patients at NYP/WCMC. Enhancing patient communication through multidisciplinary care may play an important role in improving adherence to OPAT follow-up, which can have a meaningful impact on healthcare providers’ ability to effectively treat infections and prevent toxicity in patients at NYP.
• Anecdotally, patients expressed gratitude that the ID team took the time to explain and offer in writing—specific details on the care plan as they transitioned from hospital to home. Patients expressed satisfaction with having comprehensive information on the treatment course designed to overcome their infection, and felt that they understood how to move forward with the help of the ID team.

Conclusions/Future Directions

A dedicated mid-level provider is needed to coordinate a formalized transition process from inpatient to OPAT home care, which would help enhance the quality and safety of OPAT management and improve patient satisfaction at NYP/WCMC.

Salary support for a dedicated full-time mid-level provider could be offset by the substantial institutional cost savings attributable to earlier hospital discharge facilitated through the OPAT program.

Previous studies have shown a 30-60% rate of adverse events with OPAT, highlighting the importance of a coordinated and closely monitored system for patients on OPAT.

The next project of this work will aim to compare adverse event rates in OPAT patients who adhered to post-intervention ID follow-up (cases) versus those who did not receive any intervention (matched controls).

References


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Evaluating Adherence to Clinical Guidelines For Thrombophilia Screening
Amy Kwon, Mikhail Roshal, Maria Teresa De Sancho
New York Presbyterian Hospital/Well Cornell Medical College

Background
- Thrombophilia disorders are found in over 60 percent of patients with unprovoked venous thromboembolism (VTE).
- Diagnosis of thrombophilia is based on a combination of genetic, activity-based, antigenic, and serologic tests.
- Over-screening incurs significant laboratory costs and unnecessary consultation with hematologists.
- Screening guidelines have been published by the College of American Pathologists and the International Society of Thrombosis and Hemostasis to improve diagnostic yield.
- Clinical adherence to screening guidelines has not been evaluated at New York Presbyterian Hospital.

Project Aims
1. To assess the diagnostic yield of thrombophilia screening at New York Presbyterian Hospital
2. To evaluate physician adherence to published clinical screening guidelines at New York Presbyterian Hospital

Methods
PART I: Computational analysis
- Laboratory results for thrombophilia screening tests ordered between August 2010 and June 2013 were analyzed.
- Positivity rate was calculated with R.
- Appropriateness of follow-up for abnormal results was evaluated for inherited and acquired thrombophilia. Follow-up was defined as replication of a given test within a specified confirmatory period.
- Activity-based and antigenic tests: 30 days after initial test.
- Venous and capillary (LC, LA) and serologic tests for antiphospholipid antibodies (aPLA): 12 weeks after initial test.

PART II: Retrospective chart review
- Random selection (n=100) of patient charts in whom thrombophilia testing occurred between August 2010 and June 2013. Thrombophilia evaluation was defined as ≥2 thrombophilia tests including (but not limited to) protein C, protein S, and/or antithrombin (AT) analysis.
- Chart histories were reviewed to assess compliance with screening guidelines published by the College of American Pathologists (CAP) and the International Society of Thrombosis and Hemostasis.
- Rate of departmental adherence to clinical screening guidelines was noted during review.
- Exclusion criteria: Patients younger than 18 years old and incomplete chart documentation.

Key Findings
A total of 42 patients, representing 4630 unique thrombophilia panels, were identified during the specified time period.
Low diagnostic yield and low rates of appropriate follow-up were found with current screening practices.

Figure 1. Low diagnostic yield of thrombophilia screening. Actual positive test rates for thrombophilia screening at NYUH are lower than expected positivity rates in high-risk populations (n=100).

Figure 2. Appropriateness of thrombophilia screening follow-up. Initial percentage indicates rate of appropriate confirmatory follow-up performed within an appropriate period. Parenthetical percentage indicates rate of confirmed analysis abnormality when appropriate follow-up is performed.

Figure 3. Reasons for non-adherence to clinical screening guidelines. Causes include overtreatment of inherited or acquired thrombophilia screening guidelines, medical conditions or medication interactions, and/or combinations of both. Percentages indicate proportions of incorrectly ordered tests due to missed factors (overall incorrectly ordered tests totaled 73 percent).

Lessons Learned
- The majority of thrombophilia screening is ordered in the absence of clinical indications. Non-adherence to guidelines, as well as overtreatment of medical conditions and medication interactions leads to falsely positive results.
- Confirmatory follow-up for thrombophilia testing is inconsistently performed.
- Physicians across medical specialties have poor adherence to thrombophilia screening guidelines.

References

Next Steps
1. To educate clinicians at NYUH about thrombophilia screening guidelines
2. To compare pre- and post-education positivity rates
3. To assess cost-effectiveness
Characteristics of Medicine Inpatients who Engage the Discharge Appeals Process

Sarcy Y Chu, Ashley E. Gammon, PhD, Hsiang Wei MA, Jesse A. Bastiaens, Alexandra Sasy, Carol de Jesus MSW, Linda M. Gerber, PhD and Ernie L. Esquivel, MD
New York Presbyterian Hospital/Wall Cornell Medical College

Project Aims

(1) To better understand the characteristics and motivations of patients who engaged the appeals process
(2) To identify the biomedical, psychiatric, socioeconomic and hospital-related factors that predict whether patients will engage the discharge appeals process
(3) To determine the impact of the discharge appeal process on hospital length of stay and measures of quality of care, including readmissions and follow-up

We identified Medicare/Medicaid patients admitted to the Medicine Service between July 2010 – Dec 2012 who appealed their discharge. We hypothesized that biomedical factors, psychiatric, socioeconomic and hospital-related factors may be determinants of a patient’s decision to appeal; hence, we conducted a retrospective chart review and analyzed a variety of parameters. A control group, matched by age (± 10 years) and discharge date (± 4 weeks) was identified using 1:1 matching. Statistical tests were used to compare variables between cases and control groups including chi-square test for dichotomous variables and t-tests for normally distributed continuous variables. To evaluate the association of case vs. control status with prognostic factors while controlling for potential confounding variables, binary stepwise logistic regression analysis was used.

Key Findings

- Patients appeal their discharge due to disagreement with care plan or because they are unhappy about their inpatient care after discharge. The two groups differ significantly in age, comorbidity and in their disposition at the time of discharge.
- Among 174 appeals, 44 were generated by 16 individuals over a 36-month period (range 2 – 6 appeals).
- Appeal leads to significant delay in discharge, but no increase in readmission

Lessons Learned

- The decision to appeal hospital discharge is impacted upon by a lack of social support systems, prolonged hospitalization and potential secondary gain for a small group of patients.
- Discharge appeals ultimately lead to QIO’s uphold the decision to discharge the patient, but with resulting prolongation in hospital discharge and additional time investment.
- Is discharge appeal surrogate marker for inadequate communication between physicians and their patients?

Next Steps

- Dissemination/education
  - Unique to Cornell or similar experience at other hospitals
  - Oral presentation at Society of Hospital Medicine 2014
  - Develop educational materials for patients/families better explaining transitions of care at discharge
  - Home care, sub-acute rehabilitation
  - Frequent appealers – a population to target for intervention

Methods

- For majority of appeals, QIO’s uphold the decision to discharge.
- In a bivariate analysis, the following parameters were significantly (p < 0.05) different between appeals cases and controls.
  - Ethnicity (white race)
  - Residence and support system
  - Length of hospitalization
  - Number of previous hospitalizations
  - Number of ED visits
  - Procedural Interventions
  - Psychiatric history
  - Change in living situation at discharge
  - Home care on admission
Improving Alpha-Numeric Paging on a General Medicine Floor

Parag Goyal MD; Shirley Cohen-Mekelburg MD; Celia Egan MD; Marianne Moore MS RN PMHNP-BC; Matthew Tiede PA-C; Michelle Unterbrink; Renuka Gupta MD; Arthur Evans MD MPH

New York Presby-Weill Cornell Medical College

The Problem

- Alpha-numeric paging is underutilized at NYP/WCMC
- A previous QI initiative taught nurses about the advantages of alpha-numeric paging, resulting in increased use of alpha-numeric paging and subjective improvement in patient care
- One important barrier to utilization of alpha-numeric paging was nurse perception that using alpha-numeric paging leads to less call backs, and therefore less closed-loop communication

Project Aims

- To increase utilization of alpha-numeric paging by providing nurses with their own alpha-numeric pagers
- To improve closed-loop communication

Methods

Setting and Study Population
- Nurses (n=20) and resident physicians (n=6) on the 5-Central General Medicine unit at NYP/WCMC

Intervention
- Nurse education sessions were held by the PatientCareDirector to review the 4 components of an ideal alpha-numeric page:
  1. Patient Name, 2. Clinical Scenario, 3. Sender's Name, and 4. Sender's Contact Information
- Unique alpha-numeric pagers, similar to those held by resident physicians, were given to each nurse
- Resident physicians were instructed to use nurse-pagers as a means of ensuring closed-loop communication

Data Collection
- Paging logs of resident physicians were reviewed for 7 days before and for 7 days after the intervention
- Pages were scored based on number of ideal components included—
  - "Suboptimal" = 1 component; "Acceptable" = 2-3 components; and "Ideal" = 4 components
- Surveys were completed by nurses and resident physicians before and after the intervention, targeting perceived impact of alpha-numeric paging

Key Findings

- Number of pages received by resident physicians were similar pre- and post-intervention (225 vs. 238)
- Following intervention, the quality of pages increased (p=0.02), as shown in Figure 1

- Among resident physicians (100% response rate) and nurses (100% response rate), most felt that alpha-numeric paging led to improvements in:
  - response time
  - closed loop communication
  - patient care
  - job satisfaction
  (Shown in Figures 2 & 3)

Lessons Learned

- Nurse alpha-numeric pagers improve communication between nurses and resident physicians, and are perceived as beneficial by both nurses and residents

Next Steps

- Expand the intervention to other nursing units
- Test new technologies: 2-way pagers, mobile phones
- Measure whether closed loop communication improves metrics of efficiency and quality of patient care

References

The CARE Project:
A Multi-disciplinary Approach to Improve the Care of Hospital Super-Utilizers

S.R. Tobst, K. Berchou, R. George, C. Gozdz, K. Muana, C. Hoppenthaler, R. Sall, Y. Robonk Fink, C. DeJesus

New York Presbyterian Hospital/Weill Cornell Medical College

The Problem
Hospital super-utilizers often receive inadequate care despite exorbitant costs incurred to the medical system; A multidisciplinary team that focuses on an individualized approach to care has been demonstrated in the literature to improve care and reduce costs in this patient population.

Project Aims
- To decrease annual inpatient admissions among hospital super-utilizers by an average of 30% over a 12 month period.
- To perform in-depth assessments of each enrolled patient to identify barriers to care and unmet needs contributing to frequent hospitalizations; and based on this assessment to develop individualized intervention plans, that can be qualitatively measured for success.

Methods
- Team: A multi-disciplinary care team comprised of representatives from hospital medicine, social work, primary care, and emergency medicine has been assembled
- Patients: A hospital super-utilizer has been defined as a patient with five or more inpatient admissions to the Medicine service within a 12-month period.
- Intervention: An in-depth assessment to identify barriers to care and unmet needs contributing to frequent hospital admissions is performed. Based on the findings, an individualized care plan is created with the patient, caregivers, and providers.
- Outcomes measured: For the following variables we will compare the 12 months pre-enrollment to the 12 months post-enrollment:
  - Number of admissions to the Medicine service, number of 30 day readmissions:
  - Average length of stay (LOS) per admission:
  - Number of ED visits and cost to the hospital
  - Data collection: Notification of re-admissions is made through the ED or our colleagues. Contact with patients and providers is tracked through notes on EPIC. A data analyst will assess the measurable outcomes as data becomes available.

Lessons Learned
- As the current healthcare system is fragmented and often ineffectual in caring for super-utilizers, a commitment to innovation and clinical re-design is crucial to any program that aims to improve care in this patient population.
- Engage stakeholders early and continuously. Stakeholders need to be from both the inpatient and outpatient settings, as well as multi-disciplinary.
- As these patients often have significant psychiatric co-morbidities, partnering with a psychiatrist is crucial.
- Assisting these patients is a very time-intensive process. They require ongoing psychosocial support and help navigating a complex, fragmented system. Much of our initial work is spent engaging patients and building relationships.
- Hospital super-utilizers represent a diverse group in terms of diagnoses and underlying problems leading to over-utilization of hospital resources, which may be highly individualized.

Next Steps
- Enroll remaining 6 patients
- Initiate the home visit phase of project
- Enlist the expertise of a psychiatrist
- Present a poster at CCHP at the Jefferson Population Health Colloquium, a component of the AAMC Hospotting Challenge
- Present a poster at SGIM 2014 Annual Meeting if our abstract is accepted

References
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Protocol for Emergency Department Placement and Management of Indwelling Urinary Catheters in Older Adults

Mary R. Mulcare, MD; Tony Rosen, MD; Sunday Clark, ScD; Kartik Viswanathan, PhD; Benjamin A. Scherban, BA; Jaime Lynn Hayes, RN, BSN, Michael E. Stern, MD, MA; Nita E. F. Brennenbauer MD

New York Presbyterian Hospital/Weill Cornell Medical College

The Problem
- Indwelling urinary catheters (IUCs) are commonly placed in older adult emergency department (ED) patients for varying reasons.
- IUCs are associated with significant patient safety risks: urinary tract infection, pain, falls, and delirium.
- IUCs are often placed in ED patients for whom it may not be appropriate or need them only briefly, sometimes simply for staff convenience.
- Once inserted, IUCs are rarely removed in the ED

Project Aims
Phase I (qualitative): To explore ED provider knowledge, attitudes, and practice patterns surrounding placement and management of IUCs in older adult ED patients, and guide development of a clinical protocol for IUC use.
Phase II (literature review): To inform an evidence-based clinical protocol through an extensive literature review.
Phase III (protocol): To develop a new evidence-based clinical protocol highlighting appropriate indications for placement, reassessment, and removal of IUCs in the ED.
Phase IV (survey): To evaluate education of ED providers on appropriate usage of IUCs in older adults.

Methods
Phase I: Four focus groups were conducted, each including a single ED provider type: attending physicians (n=13), residents (n=8), physician assistants (n=11), and nurses (n=11). Focus groups used a semi-structured format and ranged in duration from 23 to 33 minutes. The sessions were recorded and fully transcribed. Data were coded and analyzed to identify themes using NVivo10 (QSR International).
Phase II: An extensive literature review was completed to identify current clinical protocols extant regarding placement, care of, and removal of IUCs primarily in the ED setting, and the impact of these protocols on standardization of the decision making process and reduction in use of IUCs as a result. Additional literature review was done regarding evidence-based recommendations for use of IUCs in specific patient populations.
Phase III: Developed from expert consensus based on results from Phases I & II.
Phase IV: Developed a comprehensive, evidence-based educational intervention consisting of a 20 minute scripted slide presentation describing the components of the protocol. Written surveys, including 26 unique clinical scenarios where an IUC might be considered, were administered before and immediately after the intervention. 120 ED providers participated in this study; 47 resident physicians (RP), 17 attending physicians (AP), 18 NPs, 13 PAs, and 36 nurses (N). Descriptive analyses were performed using Stata v12.0 (StataCorp. College Station, TX).

Key Findings
- Identified 13 major themes and 31 sub-themes.
- Confirmed that current clinical decision-making for IUCs in older adults varies among ED providers.
- 100% of groups acknowledged the known risks for patient safety and the deleterious outcomes associated with IUCs.
- Agreement that IUCs are often inserted primarily for staff convenience.
- Identified 10 key elements for a successful clinical protocol in our setting.
- Identified 13 potential barriers to practice standardization.

Lessons Learned
Phase I: Participants confirmed that practice varies and IUCs are over-utilized in the ED.
Phase II: IUCs are often placed in older adults for whom it may not be appropriate or need them only briefly, sometimes simply for staff convenience.
Phase III: Agreement on the clinical protocol.
Phase IV: A brief educational intervention on IUC usage in older adults may have a significant impact on EM provider practice.
Overall: Appropriately achieving group participation of all those involved in IUC placement in the ED (RNs, MDs, PAs, NPAs) during development and implementation of the protocol has allowed for a successful adoption of the protocol into daily practice.

Next Steps
Phase V (quantitative): Quantitative analysis of the impact of the protocol on the practice of IUC use in older adults in the ED before and after the protocol was initiated.

Challenges in hospital and outpatient policies: This protocol is being introduced in both the lower Manhattan and Columbia University Medical Center Emergency Departments this spring. Adoption of the protocol in other departments across the hospital is possible.

References
Improving the Handoff Process Using Internet Protocol Phone Technology
Heidi Nicewarner, MD. MPH, Samuel Sultan, MD, Laura Gingras, MD, Augustine Chung, MD, Abra Fant, MD, David Bodnar, MD, Jose Fernandez, MD, Jennifer Lee, MD
New York-Presbyterian Hospital/Weill Cornell Medical College

The Problem
- Handoff practices between the ED and inpatient services at NYP-WC:
  - Very widely
  - Cause frustration among housestaff
  - May contribute to adverse patient events
  - Are inefficient, delayed and sometimes fail to occur at all
- Contributing factors:
  - Land-line phone conversations
  - The busy and dynamic environment of the ED
  - Use of an overhead announcement system

Project Aims
- Determine whether providing ED residents with Cisco Wireless Voice over IP (VoIP) phones would improve:
  - Satisfaction with the handoff process
  - The number of adverse effects on patients related to poor handoff communication (perceived by residents)
  - The percentage of patients admitted without any verbal handoff between providers
  - Time waiting for handoff
- Data collection via Pre/Post satisfaction surveys completed by housestaff regarding the communication process

Methods
- 2 different methods of communication were studied:
  1) Standard practice – land-line phone calls and overhead announcements
  2) VoIP phones
- ED residents in Areas A and C were each assigned a VoIP phone for use during an entire shift
- DOM residents were given a directory with all the individual VoIP phone numbers to use if they preferred
- Data collection via Pre/Post satisfaction surveys completed by housestaff regarding the communication process

Key Findings
- Resident Satisfaction with Handoff Process
- Adverse Effects on Patients Related to Poor Handoff Communication
- DOM Residents' Estimation of Time Spent Waiting for Handoff
- DOM Residents' Perception of ED to Reach ED Residents after Handoff

Lessons Learned
- Improved handoff satisfaction
- Fewer adverse effects perceived
- DOM residents:
  - Perceived fewer patients to be admitted without verbal handoffs
  - Spent less time waiting for handoff
  - Had an easier time reaching ED residents for handoff
- Other Findings:
  - Pre-intervention, ED residents were generally satisfied with the handoff process:
    - 100% rated their level of satisfaction as "neutral" or "satisfied"
    - Post-intervention, the quality of the handoff was perceived as mostly:
      - "good" (59%) or "acceptable" (27%) by ED residents
      - "poor" (26%) or "unsatisfactory" (4%) by DOM residents
    - VoIP phones had many auxiliary benefits outside the study:
      - Callback number for other services/consults
      - Direct line to a patient's PMD
      - Easier to speak with bed coordinator
- Remaining Questions:
  - Are the results sustainable long term?
  - Would the improvements be more pronounced once VoIP phones are universally available across the ED?
  - Would VoIP phones be beneficial for use by DOM residents?
  - Would the availability of VoIP phones improve handoff with services other than the DOM?
  - Would a formal cost benefit analysis suggest VoIP phones to be beneficial for the hospital to invest in?

Next Steps
- Request purchase of VoIP phones for ED residents from NYP
- Further study considering:
  - The quality of handoffs between the ED and inpatient services
  - The ideal form of communication for handoffs between ED and inpatient services (Is a verbal handoff the gold standard?)
Testing an Insulin Titration Algorithm to Combat Clinical Inertia and Improve Inpatient Glycemic Control

The Problem: Hyperglycemia in the hospital setting is a common problem with serious consequences. Improving glycemic control has been shown to reduce complications in both medical and surgical patients, and decrease length of stay. Insulin is the drug of choice to manage inpatient hyperglycemia (McDonnell & Umpierrez, 2012; Umpierrez et al., 2012). The initiation and titration of basal (long-acting) and bolus (rapid-acting) insulin is often delayed, secondary to fear of hypoglycemia and a lack of prescriber knowledge and comfort level with safe and effective dosing. After implementation of a comprehensive insulin order set in the inpatient computerized provider order entry (CPOE) system, our inpatient Diabetes Team examined blood glucose trends over time. Data analysis revealed a decrease in rates of hyperglycemia with a concomitant increase in rates of hypoglycemia.

A limitation in the insulin order set is that only the initial starting dose is provided. We hypothesized that clinical inertia and prescriber lack of knowledge may lead to a delay in titration of both basal and bolus insulin. After the starting dose, it was left to the individual prescriber to adjust the insulin dose if glycemic targets were not met. The housestaff approved of our recommendation to create and test a titration algorithm for insulin dosing.

Project Aims: We sought strategies for decreasing rates of hyperglycemia while maintaining or reducing rates of hypoglycemia in an effort to improve patient outcomes and safety.

Methods: We developed a simple titration algorithm based on blood glucose ranges to facilitate safe and effective titration of both basal and bolus subcutaneous insulin, while avoiding subsequent hypoglycemia. The algorithm was based on the Endocrine Society Guidelines insulin dose titration recommendations (Umpierrez et al., 2007, Umpierrez et al., 2012).

After IRB approval, we piloted the algorithm beginning in May of 2013 by educating the 5 North medicine housestaff in its use. The insulin and diabetes nurse practitioner (JJS) met twice a month for 15 minutes with groups of 5N housestaff responsible for ordering insulin. The new titration algorithm was presented to guide the housestaff on which insulin to adjust based on patterns of glycemia over the previous 24-hour period. To reinforce the teaching, a pocket card was distributed containing the key elements of the algorithm (see Fig 1).

Fig 1. Insulin Titration Algorithm Pocket Card Version 1.0

Point of care (POC) blood glucose (BG) data from the 5N medicine unit was analyzed for three months after the intervention and compared to the same three calendar months from the previous year.

Fig 2. Titration Algorithm: How to Adjust Insulin Version 2.0

In June of 2013, housestaff feedback to the inpatient diabetes nurse practitioner indicated that they were uncomfortable calculating and entering the dose adjustments. This was due to unforeseen difficulty in deciding how to round a fractional dosing increment (e.g. adding 10% to a dose increase to 8 units).

To address this need, the intervention was modified by creating a new version of the algorithm which pre-calculated the 10 or 20% insulin dose adjustments (Fig 2). In September 2013, the inpatient diabetes nurse practitioner instructed the housestaff in the new version of the algorithm.

Key Findings: The primary outcome for the QIPS project was the change in glycemic control as shown by the rates of hyperglycemia and hypoglycemia after the education sessions (Fig 3) in 2013.

- Significant decrease in hypoglycemia from 2012 (5.87%) to 2013 (1.82%), p<0.029
- Significant decrease in blood glucose levels in the target range from 2012 (65.67%) to 2013 (58.85%), p<0.001
- Significant increase in hyperglycemia from 2012 (31.78%) to 2013 (41.33%), p<0.001

Lessons Learned:
- The intervention to teach housestaff to use an insulin titration algorithm by hand entering percent dose adjustments was not effective in improving hyperglycemia rates.
- A second intervention, which included the pre-calculated insulin doses, did not improve hyperglycemia rates.
- Possible reasons for the rise in hyperglycemia after the intervention included: an increase in clinical inertia due to poor acceptance of the algorithm, the algorithm doses may have been less aggressive than prior titration methods, patient variation from year to year, and, new housestaff with different glycemic management knowledge and beliefs.
- Education in use of an insulin titration algorithm can be safely implemented without increases in hyperglycemia.
- Potential barriers to effective utilization of the algorithm included difficulty in calculating the appropriate doses and the complexity of entering the new doses into the computerized prescriber order entry (CPOE) screen.
- Use of a CPOE insulin titration algorithm with automated calculation and order entry might reduce these barriers and foster adoption of the algorithm.
- These results reinforce the importance of piloting any new initiative involving glycemic management strategies prior to hospital-wide implementation. This is especially important when the initiative involves insulin as insulin is the #1 high-risk medication in both prevalence and severity.

References:

Fig 3. Unit 5 North Blood Glucose Values May, June, September 2012 & 2013

Next Steps:
- Implement and pilot test insulin titration algorithms in the CPOE with automated insulin dose calculation.
- Develop and implement a data-driven approach in the CPOE to alert providers to the need for insulin intervention.
- Analysis of timely POC blood glucose data to evaluate the effects of both the basal and bolus insulin titrations.

Acknowledgements:
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EMERGENCY DEPARTMENT LOW RISK CHEST PAIN FOLLOW-UP PROJECT

Peter A. D. Steel, MA, MBBS; Jeremy D. Spearling, MD; David J. Bodnar, MD; Sunday Clark, MPH, ScD
New-York Presbyterian Hospital / Weill Cornell Medical College

The Problem
- Chest pain (CP) is the 2nd most common emergency department (ED) complaint accounting for 15% of ED visits per year.
- 2% of ED patients with acute coronary syndromes (ACS) are misdiagnosed and discharged from the ED.
- The rate of 2D ECG has increased from 15% in 2003 to 25% in 2012 for patients with chest pain.
- Ambulatory low-risk chest pain patients have low rates of 2D ECG, which are lower than the national guidelines.

Project Aims
1. Provide WCMC ED providers with a standardized, multidisciplinary clinical pathway and to identify patients presenting with CP who are low risk.
2. Implement a web-based technology solution for declining and "forgoing" patients from the ED with a low risk of 2D ECG.
3. Reduce chest pain follow-up compliance and to facilitate patient compliance with standard 2D ECG follow-up.
4. Evaluate the efficacy and safety of the protocol, including tracking of the rates of further testing and outcomes.

Methods
A. Emergency Department Care
- ED provider identifies chest pain patient as "low-risk" or per provider criteria & patient consents to outpatient follow-up. (Based on or by the ED)
- ED provider uses the Emergency Department's no-hassle service to arrange rapid (≤1h) 2D ECG follow-up.

B. Patient Discharged from the Emergency Department
- Cardiology (Technical Care) Coordinator schedules appointment:约于5.h, blood work, electrocardiogram (EKG) appointment, wireless patient for confirmation of date and time. 90% of patients consent.
- Patient Compliance Follow-Up Call:
  - Post ED discharge, ED Team contacts patient via telephone to confirm appointment, follow-up, remaining patients of date, time and location of cardiology appointment.

C. Cardiology Outpatient Care
- ≤1h 2D ECG Follow-up Appointment:
  - Patient required by cardiology attending to complete setting in 2 weeks.
  - Further diagnostic testing arranged, as appropriate.

CCC Case Discussion:
- Low Risk Chest Pain patients referred.
  - Local cardiology outpatient appointment.
- Further testing & events.
- Cardiology tracking ongoing.

D. Emergency Department Follow-Up
- 72h Day: Patient Satisfaction Questionnaire: Conducted by telephone
  - Patient satisfaction questionnaire independently addressed both ED and cardiology outpatient experience.
- 48h Day: Patient Follow-Up Call: Conducted by telephone
  - Patient discharged with acute myocardial infarction (MI).

Key Findings
- 61 patients were enrolled in the protocol and invited for follow-up appointment scheduled.
- 54 patients completed the protocol.
- 4 patients admitted to hospital for acute coronary syndrome (ACS) and subsequently discharged.
- Among the 61 patients who were discharged from the ED and included in the analysis:
  - 54 (88%) were compliant with follow-up.
  - 7 (12%) were non-compliant.
  - 2 (3%) did not show up.

Lessons Learned
- The use of comprehensive emerging technologies to optimize outpatient follow-up and compliance attainment is recommended.
- This protocol that only necessary patients should be delayed for the protocol.
- 4 of patients who were declared an "Low-risk" by the protocol reached abnormal results with subsequent elevated levels of cardiac biomarkers.
- The protocol was well received by the patients and considered a positive step towards increasing patient satisfaction and reducing healthcare costs.

Next Steps
1. Patient satisfaction data to the WMC ED providers to optimize future patient attendance.
2. Implement a more comprehensive protocol to improve the accuracy of patients who are deemed low risk for further evaluation.
3. Efforts to reduce the number of patients who are discharged from the ED.
4. Consider the benefits of implementing this protocol in other EDs and the impact on patients' outcomes.

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- Title: The Importance of Early Detection of Acute Coronary Syndromes
  - Author: John S. Wang, MD, et al.
  - Journal: The Journal of the American College of Cardiology
  - Volume: 65, Issue: 8, Pages: 781-788
  - Year: 2015

- Title: Acute Coronary Syndromes: A Comprehensive Resource for Healthcare Providers
  - Author: James T. Green, MD
  - Publisher: Elsevier
  - Year: 2016

- Title: The Role of Electrocardiography in the Diagnosis of Acute Coronary Syndromes
  - Author: Jeffrey L. Silversides, MD
  - Journal: Circulation
  - Volume: 130, Issue: 20, Pages: 1701-1709
  - Year: 2014
Improving Patient Safety by Implementing a Multidisciplinary Discharge “Time-Out”


The Problem

- Discharging patients with unnecessary central lines can lead to infection, bleeding, and other complications
- 4 patients in the last 6 months were discharged with central lines
- No mechanism in place to prevent discharge with unintentional hardware

Project Aims

Primary Aim:
- To implement a discharge “time-out” tool for at least 50% of all discharges on the Medicine Orange and Yellow teams from SW over three weeks

Secondary Aim:
- To evaluate compliance of discharge “time-out” tool without daily reminders

Methods

- Met with SW nurses, residents and patient care coordinator to educate about project
- Quality tools:
  - Discharge “time-out” survey
  - Surveys placed in easy to locate areas on SW
  - Physical exam
  - Reminder pages for 7 weeks
- Metrics:
  - Primary: number of “near misses”
  - Secondary: percent of completed surveys
  - Process improvement
  - No reminder pages for weeks 1-3 to assess sustainability

Discharge Time-Out

Please perform at bedside

Step 1: Ask patient: Do you have any medication devices or materials such as IVs or other tubes in your body?

Step 2: Examine the patient

Key Findings

Collected 12 Time-Out sheets out of 17 discharges from 7/24 - 7/31/13 (First week of intervention)
- 70% 6% response rate
Collected 1 Time-Out sheets out of 13 discharges from 8/1 - 8/14/13 (Second week of intervention)
- 7% response rate
Total of 13 Time-Out sheets out of 30 discharges
- 43% response rate

Lessons Learned

- During 3 week period there were no “near misses”
- 70% compliance in week 1 with reminders and 7% in weeks 2-3 without reminders
- The drop in discharge “time-out” between weeks 1 and 2/3 is almost certainly due to lack of daily reminders
- SW Orange and Yellow teams received surveys regarding barriers to performing “time-out”
- Barriers they pointed out included:
  - Difficulty coordinating timing with HR to complete “time-out”
  - Lack of standard test time for “time-out”
  - Resident time constraints
  - Some residents were not educated about discharge “time-out” tool
  - Lack of universal inclusion of SW patients made it difficult to distinguish eligible patients for discharge “time-out”
  - More time necessary to implement tool is order catch near misses
- Formal communication with all house staff is necessary
- Reminder system necessary to improve compliance
- Universal implementation to improve sustainability

Next Steps

- Multidisciplinary focus groups with patient care directors, social workers, nurses and residents to generate ideas for sustainability
- Reminders of lines in place as hard stop for discharge order
- Implementing universal discharge “time-out” for all teams in all locations.

References

Talking "the talk":
A pilot quality improvement project to increase advanced directive conversations in a resident outpatient clinic.
Amiran Badashvili, MD, Michael T. Bender, MD, Emily A. Marcus, MD, Alexandra C. Racanelli, MD PhD, Brian West, MD, Brian M. Eise, MD, and Amanda S. Carmel, MD
Department of Medicine Weill Cornell Medical College/New York- Presbyterian Hospital New York, NY

The Problem
Studies show that the prevalence of outpatient physician-patient advance directive discussions is remarkably low (<1.0%). Yet data confirm that such discussions strengthen clinical relationships and are welcomed by the patients regardless of age or health status.

Project Aims
We sought to define barriers to advanced directive discussions in our resident clinic. Additionally, we aimed to assess the impact of an educational intervention on internal medicine residents' knowledge and the frequency of advanced directive discussions in a resident clinic.

Methods

![Flowchart showing the implementation of the intervention]

- Advanced directive conversations were documented in 8 of 564 resident patient encounters (1.4%) pre-intervention and in 4 of 611 encounters (0.7%) post-intervention, which did not represent a significant change (p=0.2).
- The percentage of residents who could define different outpatient advanced directives doubled from 32% before to 63% after our intervention; this did represent a significant change.

Key Findings

<table>
<thead>
<tr>
<th>Advanced Directives</th>
<th>Pre-intervention</th>
<th>Post-intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total no. of patient encounters</td>
<td>564</td>
<td>611</td>
</tr>
<tr>
<td>Total no. of residents with AD conversations</td>
<td>18</td>
<td>13</td>
</tr>
<tr>
<td>Percentage of residents with AD conversations</td>
<td>14%</td>
<td>7%</td>
</tr>
</tbody>
</table>

Lessons Learned

- Resident knowledge improved with our intervention but the frequency of advanced directive conversations did not.
- Advanced directive discussions at our clinic occur infrequently (0.7% to 1.4%) and reflect the reported national average.
- Lack of continuity with patients and incomplete knowledge gaps were identified as the two major barriers limiting advanced directive conversations.
- Patients with documented advanced directives varied in age and health status.
- Majority of residents agreed that elderly or chronically ill patients should have advanced directives.
- Residents did not perceive young healthy patients as a barrier.

Next Steps

- Future interventions should investigate the number of advanced directive conversations per total patient encounters as a function of recurrent visits with the same physician or total time a patient is known to a particular physician.
- Additionally, since patients welcome advanced directive discussions, an additional intervention could focus on teaching patients to initiate these conversations with their primary care physicians.
- Lastly, an additional study could focus on the impact of reminders to have advanced directive discussions placed in clinic or in the electronic medical record.

References
The Problem

- Nine percent of patients admitted to the medicine service at NYU-WCMC in June 2013 had limited English proficiency (LEP)
- Without formal interpreter services, patients:
  - Undergo more tests
  - Incur greater costs
  - More likely to be admitted
- Due to logistical barriers, residents find it difficult to utilize trained interpreter services when admitting patients with limited English proficiency from the Emergency Department. Admissions are often done using self-hosted interpreters or no interpreter

Project Aims

- To achieve at least 80% utilization of trained interpreter services by night float admitting residents by providing portable phones (i.e. Cisco phones).
- To improve resident satisfaction with translation services by 5%.

Methods

- Metrics:
  - Self-reported interpreter utilization data and satisfaction data collected by surveying night float residents before and after phones were made available
  - Process improvements:
    - Cisco (voice-over-IP) phone was provided for each night float admitting resident.
    - Pacific interpreters on speed dial, access code printed, speaker-phone availability
    - Resident education regarding how to use Cisco phones in particular how to dial Pacific Interpreters

Key Findings

- Cisco phones addressed barriers to utilizing formal translation services by medicine night float residents admitting ED patients in the ED
  - Utilization increased from 0% to 80%
  - Resident satisfaction increased by ~250%

Lessons Learned

- Formal translator services are underutilized by admitting medicine night float residents in the ED
- Cisco phones are highly effective and popular
- The project was helped by the significant buy-in by residents, given other anticipated and unanticipated benefits of Cisco phones (e.g., resident-to-resident communication).
- Limitations:
  - Small sample size
  - Short duration of study (3 days pre-intervention, 7 days post-intervention)
  - Sustainability
  - Cost of Cisco phones
  - Self-reporting bias
  - Incomplete education of residents on how to utilize the phone
  - Demand for more phones by medicine residents

Next Steps

- Increase sample size and study duration
- Improve resident education on technical abilities of Cisco phones
- Expand Cisco phone availability to all medicine residents for ED and inpatient use
Improving Hepatitis C Screening Rates in a Resident Clinic: A Quality Improvement Project
Glockenberg K, Gonzalez M, Kyi C, Natov N, Scordo M, Weinberg E, Carmel A.
New York-Presbyterian Hospital/Weill Cornell Medical College

The Problem
- Chronic hepatitis C virus (HCV) infection is a major cause for liver transplant and liver-related deaths in the United States.
- Roughly 75% of those infected were born between 1945 - 1965 - the baby boomer generation.
- The CDC and USPSTF recently recommended screening all patients in this birth cohort in order to increase early detection of HCV.
- However, screening rates in our ambulatory resident practice, Weill Cornell Internal Medicine Associates (WCIMA) remain low (1.7%).
- We hypothesized that one cause of this low screening rate was lack of physician knowledge about current HCV screening guidelines.

Project Aim
- **Primary Aim**: To double the HCV screening rate in the baby boomer patient population at WCIMA resident clinic through the following resident focused interventions.
  1. an HCV screening lecture
  2. an enhanced HCV screening intervention ("targeted teaching")
- **Secondary Aim**: To assess the individual effect of each of the above interventions on HCV screening rates

Methods
- Conducted a randomized, anonymous study in the internal medicine resident clinic.
- All residents received a lecture by a gastroenterology (GI) fellow regarding HCV screening guidelines.
- 20 residents were then randomized to the following two groups.
  - 10 residents randomly assigned to lecture alone (Group A)
  - 10 residents randomly assigned to lecture + "targeted teaching" (Group B)
- Residents in the targeted teaching group received a weekly email with new HCV screening guidelines and a list of their scheduled patients who were eligible for screening.
- Screening rates and odds ratios for each group were calculated.
- Pre- and post-intervention screening rates were compared using the pre-intervention group as reference.

Key Findings
- **Both interventions combined** (Group A+B) increased the HCV screening rates by 25% (1.7% vs. 8.3%, p=0.02)
- **The GI lecture alone** (Group A) resulted in a significant increase in screening (OR = 10.35, 95% CI: 3.38, 33.67, p=0.01)
- **GI lecture plus targeted teaching** (Group B) resulted in non-significant trend toward increased screening (OR=4.89, 95% CI: 1.14, p=0.065)

Lessons Learned
- Our interventions significantly improved HCV screening rates in the baby boomer population in our outpatient resident practice.
- Residents in the formal HCV screening lecture group had the largest increase in screening.
- Screening rates overall remained low despite our interventions indicating that further GI initiatives focused on HCV screening are needed.
- Additional targeted teaching may enhance screening but further study is required to determine the effectiveness of this intervention.
- Future study of a larger resident population and a longer time period is needed to assess the long term impact and sustainability of an HCV screening lecture.

Next Steps
- Implement targeted teaching to all residents.
- Increase awareness in the ambulatory setting.
- Develop a database to track screening rates.
- Continue to monitor screening rates.

References
Improving Heart Failure Health Literacy through Daily Standing Weights and Patient Engagement in the CCU

David Bennett, MD, Anjali Bhaskar, MB, Clairene Ghida, MD, Celine Egan, MD, Karl Flickenberg, MD, Eric Goodman, MD, Tina Macbeb, MD, Emily Moore, MD, Tiago Miguel, MD, Antul Prasad, MD, Katherne Sanders, MD, Surdeel Tang, MD Natalie Hellmers

Background and Aims
- Initial perception among physicians that:
  - Standing weights for CHF patients on 4N/4S were done charted inconsistently
  - Moreover, those weights were not documented before rounds
- Initial aim was improvement of daily documentation of standing weights in the CCU.
- Preliminary data showed that among patients who were able to stand, standing weights were documented appropriately and in a timely fashion.
- Our new aim was to improve patient knowledge of CHF in patients on 4S through standardized educational booklets and daily weight documentation.

Strategy for Change/Methods
- Intervention: CHF booklets were distributed to all patients in 4S with the diagnosis of CHF (and who were actively being diuresed)
- Measured % patients with CHF booklet (based on a sample of patients on one particular day in the CCU)
- Measured baseline CHF knowledge via standard telephone survey (the PAISAC Study Survey for the Congestive Heart Failure Outreach Program)
- Patients were contacted within a week of discharge from 4S based on unit census data of patients diagnosed with CHF
- Process Improvement Goals:
  - Standardization and uniformity of booklet distribution
  - Standardization of daily weight documentation in book
  - Identification of knowledge gaps amongst CHF patients

Key Findings

Distribution of Booklets

Q: Does weight gain mean worse CHF?

Q: How often should you weigh yourself?

Q: Are Daily Weights as important as Taking Medications?

Discussion
- Patient's baseline health literacy about CHF is varied and there is a need to improve patient education and involvement
- Our results reveal the lack of full implementation of:
  - the distribution of booklets
  - the recording of daily weights in booklets
- Barriers to full implementation:
  - Limited time to completely train all day and night RNs
  - Limited amount of time for robust patient education
  - Limited amount of time to chart weight in booklet and Educate
- Limitations of the study:
  - Few patient received (or were aware of) the booklets
  - Short intervention period

Lessons Learned and the Next Steps
- It is crucial to perform a careful needs assessment prior to designing and implementing a QI intervention
- There is a great need for to improve the health literacy of CHF patients in the Cardiac Care Unit (4S)
- More time is needed to roll out the CHF booklet/weight recording intervention on 4S
- Follow up patient surveys are needed to assess the intervention's impact.

Special thanks to: Dr. Jennifer Lee, Dr. Jim Honowitz, Dr. Vishal Dada, Arlette Genta, and Natalie Hellmers

References