

Abstracts of Poster Presentations

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Friday, April 13, 2018, 5:30-7:30 pm

POSTER ABSTRACT 1

Access Management Priorities in Primary Care: Perspectives from an Expert Panel

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Purpose: Effective access to primary care is critical for ensuring population health, and is a fundamental aim for health care.¹ Yet despite major efforts, achieving optimal access remains a continuing struggle, both within and outside the Veterans Health Administration (VHA).² While access itself is a balance of supply and demand, healthcare organizations aim to identify access management approaches that achieve and sustain optimal access. Limited research guidance is available, however, on prioritizing the many elements of an overall access management approach.^{3,4}

Methodology: We convened an expert panel (N=20) focused on identifying primary care access management priorities for managed care organizations, including the VHA. To develop background materials for the panel, we worked with the national VHA Office of Access to identify critical policy issues, carried out a systematic evidence review of access management, and conducted qualitative interviews with 56 frontline access managers and leaders. We recruited diverse stakeholders with potentially competing interests including patients, providers, policy makers, purchasers, and payers of healthcare services from within and outside of VHA. We developed consensus based on a 2-day face to face meeting and pre-panel and post-panel written surveys, informed by qualitative data and evidence review.

Results: The post-panel survey (response rate 85%) established consensus on eight top urgent and important

priorities for guiding primary care access management initiatives. Priorities addressed one improvement measure (routine evaluation of patient telephone calls to schedule appointments) and two outcome measures (quality of patient's experience of access; provider and staff morale). They also addressed three process improvement targets (availability of contingency staffing; prospectively managing demand through care coordination; proactively managing demand by optimizing provider visit schedules). Finally, the priorities addressed two organizational structure targets (identification of physician, registered nurse, and administrative leaders for each primary care site with authority to support access management priorities; clearly identified group practice management structure).

Conclusions: The expert panel process was successful in establishing a parsimonious set of action-oriented management priorities for guiding initiatives aimed at improving primary care access management. The priorities provide a basis for further development and evaluation of proactive primary care access management approaches, and are currently being used in partnership with senior VHA leaders for designing ongoing primary care access management improvements. The priorities are based on diverse stakeholder input and suitable for guiding access management improvement in a wide variety of primary care settings.

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POSTER ABSTRACT 2

Data-Driven Care, Culture Change, and the Special Hospital for Children and Adults with Developmental Disabilities

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Purpose: We describe a transition undergone by a special hospital for children and adults who have developmental disabilities with medical complexity to one that increasingly

embraces a data-driven quality improvement safety culture. The Matheny Medical and Educational Center is a special school and hospital for children and adults with intellectual and developmental disabilities. Its 101-bed inpatient program provides primary and specialty care for individuals with cerebral palsy, spina bifida, Lesch-Nyhan disease, and other disabling conditions who also have a broad range of associated clinical conditions. Matheny also operates an outpatient medical and dental clinic, community residences, and an adult medical day program.

From December 2014 through August 2015, new senior administrators with primarily acute care backgrounds joined Matheny bringing with them a strong appreciation for, and experience with, data-driven strategies for healthcare management. While prior efforts in quality improvement and patient safety at Matheny did involve some degree of data-gathering, the analysis, interpretation, and use of data in effecting change was limited. With the change in administration, our hospital embarked on a project to redesign its delivery system to reflect high reliability principles built upon an obsession with failure, resilience, deference to expertise, reluctance to simplify and sensitivity to operations.¹

Method: A scorecard approach was adopted both at the organization and department/team levels. An organization-level scorecard is used to organize cross-department quality and patient safety data for review by the organization's Quality Improvement Committee and by the governing body. Data from the department and team level scorecards are reviewed by the QI Committee and/or the Patient Safety Committee and acted upon as necessary. Many of the scorecard measures have corresponding control charts to monitor variation and flag potentially problematic trends.

Results: Among the outcomes are: increased incident reporting including near misses, decreased medication errors, decreased hospital acquired pressure ulcers (all stages), and increased use of data in managing patient-induced incidents. Employee engagement survey results reflect continuing concern among some staff that the increased emphasis on data and on quantitative representation of our healthcare outcomes detracts from the human dimension of our work with a unique and challenging population.

Conclusion: Considerable progress has been achieved on a variety of indices of quality of care and patient safety. Despite these favorable trends, and despite efforts to ensure that staff are aware of these trends, achieving full "buy-in" from long-tenured staff remains a challenge. The message that a quantitative approach to healthcare quality and a humanistic approach to our interactions with patients are not mutually exclusive is one that must be continually conveyed (and demonstrated) by senior managers.

References

1. Weick K, Sutcliffe K. 2007. Managing the unexpected: Resilient performance in an age of uncertainty. San Francisco, CA: Jossey Bass.

POSTER ABSTRACT 3

[T] Disparities and Burden of Osteoporosis in the United States

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Purpose: Osteoporosis (OP) is one of the most common and devastating bone health diseases affecting older adults in US. The morbidity and mortality from OP-related fractures are high with associated high costs. The US National Osteoporosis Foundation estimated approximately 9 million adults have OP and more than 48 million have low bone mass. This is a major public health concern as we confront a rapidly aging population. Addressing OP disparities will help to enhance the quality of bone care in the nation's bone health programs.

Methodology: We used the data of adult participants of the National Health and Nutrition Examination Survey (NHANES) with reported bone mineral density (BMD) measured from the periods of 2005-2010 and 2013-2014 to examine OP disparities. Hologic QDR 4500A fan-beam dual-energy x-ray absorptiometry densitometers (Hologic, Inc) were used to assess the BMD of the anterior-posterior lumbar spine and proximal femur in specially equipped mobile examination centers. BMD cutoff values to define OP at the hip and femur were based on 2.5 SD or less below the mean peak bone mass of young healthy adults. Race/ethnicity (non-Hispanic white, non-Hispanic black, Hispanic, other races), educational attainment, working status, nativity and citizenship status, and economic status (poverty-to-income ratio, PIR<1, 1-1.99, 2-3.99, ≥4) were categorized based on the survey design. Age- and sex-standardized OP prevalence (SOP) estimates with 95% confidence intervals (CI) and stratification were presented. All analyses were performed using SAS survey procedures, accounting for the complex sampling design of NHANES and appropriately weight in statistical models. The mobile examination center weights were used in all analyses following the NHANES analytic guidelines.

Results: Based on race/ethnicity, the SOP was highest among other races (5.9%, CI: 4.6-7.2%), whereas it was lowest among non-Hispanic blacks (1.7%, CI: 1.2-2.2%). Based on education, SOP was highest among those with less than a high school education (HSE) (5.1%, CI: 4.3-5.9%), whereas it was lowest among those with more than HSE (3.2%, CI: 2.7-3.6%). Based on work status, SOP was highest among unemployed participants (5.4%, CI: 1.9-8.9%), whereas it was lowest among working participants (2%, CI: 1.6-2.4%). Based on immigration status, SOP was highest among non-citizens (6.4%, CI: 5-7.8%), whereas it was lowest among US natives (born in US) (3.4%, CI: 3.1-3.7%). Based on economic status, SOP was highest among those with PIR<1 (5.5%, CI: 4.4-6.5%), whereas it was lowest among those with PIR≥4 (2.4%, CI: 1.9-2.9%).

Conclusions: The NHANES data revealed that OP disparities exist in US. OP was more prevalent among non-citizens, those who were less educated, unemployed, and those who had

lower income. The observed OP disparities suggest a need for interventions to promote better quality bone care among the socioeconomically disadvantaged groups.

POSTER ABSTRACT 4

[T] Do Quality Outcome Measures and Staff Awareness Improve through Staff Engagement and Increased Non-Email Communication?

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Purpose: Quality improvement (QI) initiatives in healthcare organizations have varying levels of success. Focusing on the microsystem and engaging those that deliver the change are key strategies for successful QI initiatives (Nolan 2007). Barriers to success may include lack of staff engagement, inflexible culture, and poor leadership (Dixon-Woods et al. 2012). Healthcare organizations can also leverage organizational change behaviors utilized by other industries and may benefit by establishing a sense of urgency, forming a guiding coalition, creating a vision, and communicating the vision prior to implementing changes (Kotter 2009). The emergency medicine department quality committee (EMDQC) at our urban level one trauma center is working to reduce harm and improve patient care. Our committee sought to improve communication with staff about QI while continuing to improve patient outcomes. Our purpose was two-fold: to better understand the current level of knowledge front line staff had about QI goals and efforts and to increase our communication with staff about QI, assessing any effects this may have on our outcome measures and on staff knowledge about QI.

Methodology: An optional 19 question fill-in-the-blank and multiple choice survey was conducted to collect baseline data about staff knowledge surrounding QI. Leveraging change management theory, the EMDQC launched a quality fair (multiple interactive learning sessions emphasizing our current status, vision and goals, and ways frontline staff impact these) and a department wide QI education campaign. The survey will be repeated post-intervention. Quality metrics for fall prevention, infection prevention, sepsis management and stroke management will be compared pre- and post-intervention.

Results: Baseline survey data (n=71) suggest that emergency department staff are not at all (4.2%), slightly (21.1%), somewhat (36.62%), moderately (30.99%) and extremely (7.04%) aware of QI initiatives department-wide and many lack awareness of hospital-wide initiatives (21.13% not at all, 39.44% slightly). Initial data suggest there is more awareness of infection prevention than other QI initiatives. Most staff (87.32%) check email more than once weekly but 23.94% report it does not help them do their job more effectively and

many preferred non-email communication methods to learn about new initiatives, 22.5% selected email as first choice method.

Conclusions: Understanding the knowledge frontline staff have about QI can help organizations tailor messaging and education efforts.

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2. Kotter, John P. "Leading change: why transformation efforts fail." *Harvard Business Review* 73.2 (2009).
3. Nolan TW. Execution of Strategic Improvement Initiatives to Produce System-Level Results. IHI Innovation Series white paper. Cambridge, MA: Institute for Healthcare Improvement; 2007.

POSTER ABSTRACT 5

[T] Evaluating the Short-Term Impact of User Interface Enhancements on Best Practice Advisory (BPA) Performance

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Background: Best practice advisories (BPAs) are a common form of clinical decision support (CDS) embedded into electronic medical records (EMRs). Significant resources go into designing these interventions, yet they often have a limited yield on desired actions. Mitigating alert fatigue can be achieved by addressing issues of usability or altering alert specificity. We evaluated the short-term impact of improvements to the user interface on ambulatory screening BPA performance. Enhancements to usability included a new color-coded stratification based on severity and criticality, separation in the display of BPAs based on their category (i.e. quality vs clinical), collapsing the default view for the BPA section to limit the need for scrolling, enabling the ability to act on individual BPAs rather than requiring action on all active BPAs, and updating the display texts for BPAs to prioritize actionable terms earlier in the description.

Methods: To identify the ideal set of metrics by which to evaluate BPA performance, we interviewed key stakeholders, including practicing clinicians, applied informaticists, clinical decision support committee members, and EMR analysts. Effectiveness was defined as the number of patients with the correct action taken divided by the number of patients for whom the alert fired, while efficiency was calculated as the number of alerts where correct action was taken divided by the number of alerts fired. Data on BPA performance was collected over the 4 months prior to and following implementation of changes.

Results: There were no statistically significant changes in effectiveness following implementation of changes to the user interface. Only 1 of the ambulatory BPAs that we analyzed (Hepatitis C screening) had a statistically significant increase in efficiency.

Discussion: Improvements to the user interface alone had a very limited impact on BPA performance when evaluated in the short-term. Limitations of our analysis are that we were only able to account for desired actions taken within 12 hours of the BPA firing. Additional data from administrative claims or EHR orders in the days and weeks following the encounter may have led to a rise in the efficiency and effectiveness calculations. Another limitation of our study is that we did not look at inpatient BPAs, where a larger number of “critical” advisories can be found and where the impact of the color-coded stratification may have been higher compared to the ambulatory setting. The time window in which we evaluated the impact of changes was also one in which multiple other changes were made to the user interface in other parts of the EMR. Future analyses of efficiency and effectiveness should include a broader set of BPAs, the potential impact of usability enhancements across different places of service, and the effect of alterations to alert specificity on rates of desired action.

POSTER ABSTRACT 6

[T] Implementation of Written Chemotherapy Consent in the Hematology/Oncology Clinic of Harlem Hospital Center: A Quality Improvement Project

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Purpose: The doctrine of informed consent is rooted in both legal doctrine and ethical theory. The American Society of Clinical Oncology (ASCO) has stated that consent to treatment with chemotherapy is an important part of treatment delivery of quality cancer care. Best practices dictate that consent conversations should be well documented in the patient record. Discussions of goals of treatment can be difficult for patients and physicians. U.S. courts have long recognized that “every human being of adult years and sound mind has a right to determine what shall be done with his own body.” The common law doctrine of informed consent to medical treatment requires disclosure of the patient’s diagnosis, the nature of the proposed intervention, intended benefits, associated risks and side effects, and medically reasonable alternatives (and their corresponding risks and side effects). In September 2017, 0% of patients receiving oral chemotherapy at the Hematology/ Oncology outpatient clinic had complete written consent even though the conversation was had. To address this patient safety issue, we partnered with hospital administration, the medical teams, and nursing staff. The aim was to achieve 100% compliance with the completion of informed consent prior to initiating oral chemotherapy.

Methodology: We retrospectively reviewed clinic notes and visits to the Hematology/Oncology clinic from January 2016 to September 2017 to evaluate the baseline compliance with informed consent documentation. Using information from surveys with interdisciplinary team, we formulated a fishbone diagram to highlight barriers to completion of informed consent documentation. The project officially commenced in September 2017. Specific interventions included: In-service training sessions, one-to-one interactions with stakeholders, display of completed form in the nursing station, and regular staff reminders.

Results: By October 2017, 100% of patients on oral chemotherapy had adequate documentation and written informed consent. This continued through November 2017.

Conclusions: Simple but effective interventions had a high impact on outcomes. We observed a steep rise in the compliance with completion of informed consent followed by a sustained 100% compliance through November. A major challenge was creating an interdisciplinary collaborative effort to achieve compliance. Nonetheless, this was a successful pilot project to study the cost effective and proficient methods that effect a sustainable change in the informed consent documentation process.

POSTER ABSTRACT 7

[T] Insight Regarding Parental Attitudes Towards Breastfeeding

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Purpose: The American Academy of Pediatrics (AAP) and World Health Organization (WHO) strongly advocate breastfeeding. Breastfeeding gives protection against variety of conditions such as bacteremia, diarrhea, respiratory tract infection, necrotizing enterocolitis, otitis media, urinary tract infection, sepsis, diabetes, lymphoma, leukemia, childhood overweight and obesity. Maternal benefits include decreased postpartum bleeding, more rapid uterine involution, decreased menstrual blood loss and increased child spacing, earlier return to prepregnancy weight and decreased risk of breast and ovarian cancers. Our objective of this study is to evaluate parents’ insight and knowledge about the advantages of breastfeeding. Education parents is the only thing that we can do to promote breastfeeding. To educate them properly, we should know what they think about breast feeding and why it is superior to formula feeding. Physicians should also identify the obstacles in exclusive breast feeding, out of which most of them could be eliminated just by increasing their awareness and educating new mothers. New mothers should be instructed about infant hunger cues, correct nipple latch, positioning of the infant on breast and feeding frequency.

Methodology: This survey study was conducted at Settlement Centers preschools near Metropolitan Hospital. Before we started the study, brief information was given to parents by

our residents. The surveys were done in person or on phone. The questions consist of knowledge regarding breastfeeding, reason behind why formula feeding is preferred over breast feeding, identifying common obstacles in breast feeding, their understanding regarding the benefits of exclusive breast feeding and the roles of the doctors in promoting breastfeeding. Full confidentiality of data was maintained. Institutional review board of New York Medical College approved this study.

Results: The survey illuminated a number of gaps, chief among them:

1. A desire on behalf of parents for more education regarding breastfeeding
2. A lack of knowledge regarding the benefits of breastfeeding.
3. Identifying barriers in exclusive breast feeding and communicating with parents and helping them understand the benefits of exclusive breast feeding and its important role in infant nutrition.

Conclusion: Human milk is an exclusive nutrient source for infants for first six months of life and should be continued with addition of solid foods after six months upto one year as desired by mother. In this study, we educated parents about benefits of breastfeeding and why it is superior to formula feeding. We think doctors should serve as advocates and be more actively involved to promote breastfeeding by education.

References

1. Section on Breastfeeding. Breastfeeding and the use of human milk. *Pediatrics* 2012; 129:e827.
2. US Preventive Services Task Force, Bibbins-Domingo K, Grossman DC, et al. Primary Care Interventions to Support Breastfeeding: US Preventive Services Task Force Recommendation Statement. *JAMA* 2016; 316:1688.

POSTER ABSTRACT 8

Interdisciplinary Application of the Lagasse Model of Structured Peer Review in an Academic Anesthesiology Department

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Introductions: A robust, structured, unbiased review of anesthetic complications is essential to ensure delivery of quality patient care and identify areas for improvement in any anesthesiology practice. One of the limitations in many peer review processes is inappropriate error attribution as well as low inter-rater reliability (IRR). An evaluation process that utilizes a discussion format, involves multiple reviewers, and provides a formalized framework have improved IRR.¹

The Lagasse Model of error classification and severity rating was applied to the quality improvement efforts of a large academic anesthesiology practice.

We report our 4-year experience with applying this systematic process including categorization and sub-categorization of events.

Background: We have an established, self-reported system of logging and tracking 26 perioperative events. Data is collected on every patient in whom an anesthetic is delivered (regardless of whether or not an event was identified). This data has been reported for over 20 years, but our systematic review process was established 4 years ago.

We average 3200-3400 anesthetics per month between two facilities. The Patient Safety Committee (PSC) members (comprised of anesthesiologists, anesthesiology residents, and nurse anesthetists) provide preliminary review of each perioperative event and determine need for referral to the committee. Cases presented at the PSC under group discussion, classification of error (Human versus System, Error Sub-classification and Severity Rating). The PSC also identifies areas of quality improvement opportunity during these discussions.

Results: 191 cases have been reviewed in a 4 year period. 76% of cases were felt to involve an error that was system based in error, while 23% were felt to be due to human error.

The three most frequent causes of system-based errors were limitation in diagnostics standards, therapeutic standards and resources (23%, 20%, 18% respectively). The most frequent subcategories of human error related to improper technique and failure to seek appropriate data (29% for both subcategories). (Graphics provided with poster)

Each case discussed was categorized by the severity of outcomes. The different categories were: 1) No change in hospital course (15%) 2) Increased care without functional deficit (58%) 3) Increased care with functional deficit (8%) 4) Death (19%). (Graphics provided with poster)

Conclusion: Recognition of untoward events are essential for quality improvement programs. Understanding common causality in complications aids in directing quality improvement efforts. Systematic examination of events should be undertaken utilizing tools to promote inter-rater reliability with a focus on identifying system-based improvements to support efforts to safely, effectively, and efficiently care for patients.

Reference

1. Levine, R. D., et al. (1998). "The effect of group discussion on inter-rater reliability of structured peer review." *Anesthesiology* 89(2): 507-515.

POSTER ABSTRACT 9

[T] Intern to Intern Guide at Harlem Hospital Center/ Columbia University: A Performance Improvement Project

Michael Oriakhi, Lukman Lawal, Jeff Anucha, Eric Alatevi, Fatima Jafri, Olutoyin Alabi, Raji Ayinla
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The transition of medical graduates into residency programs in the United States has often been greeted with concerns for suboptimal quality of care to patient, deficient

documentation, loss of revenue to hospitals and feared impact on patient safety in the early weeks/months of commencement of the residency training. Various approaches have been introduced by different programs to address these concerns, but outcome data are scarce on the success or otherwise of those interventions. There is also dearth of information on the peer to peer interventions on the problem of the 'July effect' for instance. To address these concerns, the outgoing interns of the 2015/2016 academic year at Harlem Hospital Center/Columbia University partnered with the hospital administration and created the Intern to Intern guide.

Harlem Hospital Intern to Intern Guide is residents of internal medicine driven approach to cause smooth transitioning with minimal or no effect on the quality of care by the residents during the transition period of the new interns. It included the approval of a special day for the Peer-to-peer orientation mentoring and the publication of a guide for the new doctors. This was used by the internal medicine interns from July 1st 2016. The outcome measures from the pilot project showed statistically significant result in the improved quality of documentation, decreased 'fall out rates', and better discharge summaries, by the first year residents using the previous years (2014 and 2015 interns) as controls.

However, the maiden edition of the guide has little or no information on the critical care unit of the internal medicine residency program, and so a new guide was published for the ICU in June 2017. Also, updates were made with the permission of the authors to the original edition. The guides were concise, easy to use with clear information on the available resources, expectations, and workflow at the hospital. The guides were presented to the program's 2017 fresh set of interns in June 2017 during a peer to peer orientation by the outgoing first year residents. Currently, efforts are ongoing to evaluate the quality improvement interventional project which will be ready at the time of presentation. The outcome measures includes the effect on the quality of documentations in the ICU of the program; the quality of documentations to determine if there is sustained improvement compared to the prior year and to ascertain if the efficiency of discharges and discharge summaries persisted or even fared better; and the impact on length of hospitalization.

POSTER ABSTRACT 10

Multimodality Approach to Successful Reduction of Hospital Acquired C Difficile Infection

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Purpose: In 2015, our Hospital Acquired Clostridium difficile infection (HA-CDI) rate peaked at 10.5 per 10,000 patient days in quarter 3. In addition, our total volume of HA-CDI was 49 infections in 2015. At that time, we were just beginning our

journey to transforming into a high reliability organization, and we recognized that the challenge of HA-CDI would require a multimodality approach to improve.

Methodology: Working in concert with colleagues from around the system, we developed and implemented multiple interventions:

- Testing limited to clinically significant diarrhea (defined as 3 or more loose, watery stools in a 24 hour period)
- Deferred testing of patients on laxatives, with applicable Best Practice Alert on EMR
- Routine repeat stool testing without clinical indication discouraged
- To educate and discourage usage of the Alcohol-based hand rub for CDI patients, sign placed over those dispensers in affected patients' rooms. Caregivers and family members educated to appropriate hand hygiene
- Environmental Services (EVS) optimized room cleaning processes, focusing on high touch surfaces and bathrooms in affected patient rooms twice daily with approved bleach products
- EVS instituted regular post-cleaning room assessment
- Worked with Finance to hire an extra EVS full time employee to focus on cleaning rooms of patients with CDI
- All EVS employees educated about CDI and the impact they can have on its prevention
- All clinical staff educated, including physicians
- Testing algorithm revised to match uptodate.com recommendations, based on national guidelines
- Antimicrobial Stewardship Committee developed with twice weekly meetings involving clinical leadership to guide proactive discontinuation of inappropriate antibiotics and aggressive de-escalation as indicated
- Infection Prevention proactively tracking all C diff orders
- HA-CDI rates posted on Quality dashboards and regularly reviewed
- Identification of all affected and at-risk patients at the Daily Safety Huddle. Number of days since last HA-CDI announced daily
- HA-CDI data regularly shared with the hospital Medical Executive Committees

Results: These processes were implemented throughout 2016. By Q3 2017, the hospital rate of HA-CDI had fallen precipitously to a rate of 2.6 per 10,000 patient days. Our projected volume of HA-CDI cases for 2017 is 16, representing a projected decline of 67% since 2015.

Conclusions: Hospital acquired C difficile infections can be significantly reduced, but requires a multimodality collaborative effort to accomplish. Our goal is Zero Harm, and we are optimistic that through continued application of the principles above, we will attain that goal.

My Practice Meets the NEMA XR-29 Standard: Now What? — “CT Dose Check” Feature Practical Implementation in Our Clinic

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Motivation: In April 2014 The Protecting Access to Medicare Act (PAMA) was signed into law and included many implications for imaging providers. Among these is the requirement that health care providers comply by January 1, 2016, with the National Electrical Manufacturers Association (NEMA) XR-29 Standard Attributes on Computed Tomography (CT) Equipment related to Dose Optimization and Management, also known as MITA Smart Dose.

This standard offers healthcare providers a reference to identify important tools to optimize and manage radiation dose delivery when using clinical CT equipment.

The standard requires a bundle of four key dose optimization features to be present on the CT scanners. One of the four is the CT DoseCheck software which incorporates two features — dose notifications and dose alerts — that can alert operators and physicians when dose exceeds established thresholds. The standard gives the choice to use it further or not use it further, and “how”, up to the CT scanner owner.

Methods and Materials: We developed a procedure using the CT DoseCheck software, once uploaded on our scanners, in order to improve our radiation dose monitoring and CT protocols review practice. Our process proposed consists of: programming properly the software (dose notification and dose alerts values ranges were identified and set correctly on scanners for each CT exam protocol and each run within a CT protocol), collecting data in a meaningful form by the CT technologists (a repository template was developed), periodically review of data by a qualified diagnostic medical physicist (rules were set) and follow-up (Corrective Actions were determined).

Results: By developing this process we obtained a double-folded benefit. We were able:

- 1) to ensure patients’ follow-up by the Radiation Safety Office after real-time alerts for radiation dose exceeding our set thresholds were acknowledged by CT operating technologists, and
- 2) to ensure troubleshooting by the qualified clinical diagnostic medical physicist takes place in the patients’ cases without “obvious” reasons for dose increase (such as obese, or with metal hardware in, etc.) and, when the case, that the “problem” protocols are identified for review and further optimization.

Conclusion: The “CT DoseCheck” required feature by the NEMA XR 29 standard ensures that compliant CT equipment produces high-quality diagnostic images while supporting patient radiation safety only if after uploaded on the scanner is programmed properly, data review procedure is implemented by the clinic, and a follow-up process is applied.

No One Medical Center Is the Best in Everything; How 3 Very Different Medical Institutions Collaborate Together for Breast Cancer Patients

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Breast Cancer is a complex medical condition requiring an agile, multidisciplinary approach integrating the latest in genetic analysis, treatment strategies and technologies. Equally important, it demands a compassionate care system that can partner with patients for optimal cancer care at each touch point throughout the treatment course. No individual medical institution has the capability and built-in compassion to navigate breast cancer patients through this difficult journey while retaining care coordination with primary care. Naval Hospital Jacksonville has an extensive primary care responsibility and capability for over 85,000 patients, but limited capacity to manage cancer patients beyond biopsy and mastectomy.

Previously, breast cancer care was referred to physicians in our TRICARE network for specialty care, often with services provided in multiple independent medical institutions. While the care was clearly appropriate in aggregate, it required a great burden of coordination on the patient to navigate a segregated care pathway and did not address the inherent stress and frustration of this devastating diagnosis. Furthermore, each institution operated with their own electronic medical record with little to no communication between specialists and their primary care physician to coordinate a comprehensive and whole-patient outcome approach to care.

We collaborated with Ascension Health Care in Jacksonville, Florida, a private not-for-profit hospital system, who, in turn, has partnered with the Mayo Clinic at Jacksonville, to provide state-of-the-art oncological and surgical care for our breast cancer patients. This multi-institution, multidisciplinary collaboration ensures the best cancer care available with continued coordination with Navy Medicine and primary care.

This collaboration accelerates care in a newly diagnosed breast cancer patient with specialty care by Ascension and Mayo within 24 to 48 hours of initial diagnosis with complete laboratory results and pathology specimen slides available for the treatment team. If surgery is indicated, our Navy Surgeons operate at the civilian center with civilian plastic surgeons under the same period of anesthesia to begin the reconstructive process. This timely coordination of care creates a two-fold benefit: timely presentation of critical decision-making data for optimal cancer care as well as a sense of commitment and urgency to the patient that respects the magnitude of a cancer diagnosis and associated anxiety and frustrations.

We found that by combining the best of all three distinctly different institutions, a first to our knowledge, a much higher quality of care and compassion has been symbiotically created with each institution performing the skill they perform best and preserving the continuity of care so critical to breast cancer care.

POSTER ABSTRACT 13

[T] Occurrence of “Never Events” after Total Joint Arthroplasty in the United States

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Purpose: “Never Events” (NE) refers to harmful hospital-acquired conditions (HAC) that are largely preventable and that would no longer be reimbursed. NE occurring during surgical inpatient hospitalization is indicative of shortcomings in medical quality programs. The list of errors was formalized in 2002 by the National Quality Forum and expanded in 2011. Total joint arthroplasty (TJA) including total hip arthroplasty and total knee arthroplasty is one of the most commonly performed major orthopedic procedures and is often associated with substantial morbidity and mortality. Our goal was to identify the incidence, predictive factors, temporal trend, and associated consequences of NE during admissions for TJA in US. Understanding of these events can reduce their occurrence, and thereby improve patient care, quality metrics, and cost reduction.

Methodology: Information on hospital admissions was collected from the Nationwide Inpatient Sample (NIS) from 2003 to 2012. NIS is the largest all-payer database within US with more than 1,000 hospitals sampled to represent approximately 20% of all hospital discharges each year. NIS was queried to identify NE applicable to TJA patients based on the HAC definition listed by CMS. Prevalence of NE was estimated by calculating the number of adults with at least 1 NE out of 1,000 admissions. NE was further compared before and after 2008 to evaluate the effect of the new CMS non-reimbursement policy on their incidence. Multivariable regression models were conducted to determine differences in outcomes for patients incurring NE. Logistic and linear regression models with SAS programming were used to evaluate their effects including mortality, hospital length of stay (LOS), and charges.

Results: A total of 8,176,774 patients were admitted with TJA from 2003 to 2012. 108,668 of these patients (1.33%) had ≥1 NE (Figure). The most prevalent NE was fall/trauma (0.7%), followed by deep vein thrombosis and pulmonary embolism (0.59%). Significant multivariable predictors with higher odds of developing any NE included weekend admission (odds ratio (99.9% C.I.), 4.3, $p < 0.001$) and weight loss (odds ratio (99.9% C.I.), 2.8, $p < 0.001$). A temporal comparison before and after 2008 revealed a decrease in NE after 2008 (1.4% vs. 1.2%, $p < 0.001$). After adjustment for risk factors, NE was significantly associated with increased mortality, LOS, and total hospitalization charges (Table).

Conclusions: NE in TJA patients was predictive of increased mortality, LOS, and hospitalization costs. These data allow for designing targeted strategies aimed at reducing these adverse events in high-risk TJA patients. NE had decreased in frequency since CMS announced its non-reimbursement policy on NE. This study established baseline NE rates in the TJA patient population to use as benchmarks and identified target areas for quality improvement in US.

POSTER ABSTRACT 14

[T] Patient-Reported Diagnostic Delays and Errors at the Onset of Systemic Lupus Erythematosus

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Background: Systemic lupus erythematosus (SLE) has heterogeneous manifestations and can be challenging to diagnose. **Methods:** Data were derived from the California Lupus Epidemiology Study (CLUES), a population-based, longitudinal, multi-ethnic cohort of patients with SLE. Questions on access to care included time from onset of symptoms to time seeing a doctor, how many doctors were seen before the correct diagnosis of SLE, and the specialty of the doctor if an incorrect diagnosis was initially made. The relationship between these variables and race/ethnicity, poverty level, and education level was determined through chi-squared tests.

Results: This study included 224 patients, with 89% female, a mean age of 45.6 years (SD 14), and mean disease duration of 16.9 years (SD 10). 20% had an education level ≥ high school, and 13% were below 125% of the federal poverty level (FPL). 36% were Asian, 23% Hispanic, 27% Caucasian and 11% African American. The time from symptom onset to seeing a doctor varied, with 63% seeing a doctor in fewer than 6 months, 13% in 6-12 months, 8% in 1-2 years and 13% in more than 2 years. There was a significant difference in the time it took to see a doctor by income, with 53% of those living below 125% FPL having more than 6 months delay from symptom onset to see a doctor compared to 32% of those living at or above 125% FPL ($p = 0.03$). A majority of patients saw more than 1 doctor before receiving a diagnosis of SLE, with 31% seeing 2 doctors, 16% seeing 3, and 18% seeing ≥4 doctors. 38% of patients received an incorrect diagnosis before their SLE diagnosis, and of those, 21% were incorrectly diagnosed by a primary care physician, while 10% were incorrectly diagnosed by a rheumatologist, and 7% by another specialist. There were no significant differences in the number of doctors seen or the frequency of incorrect diagnoses by race/ethnicity, education, or poverty level.

Conclusion: The time from SLE symptom onset to seeing a doctor varied greatly in this study, with 13% of patients waiting more than two years before seeing a doctor. Individuals with low incomes were more likely to have delays

in seeking a diagnosis. A majority of SLE patients in this study saw more than 1 doctor before receiving a correct diagnosis, and more than one third reported receiving an incorrect diagnosis at the onset of SLE. Patient-perceived delays and errors at onset of symptoms have both health and economic costs, and future research could examine the reasons for missed or delayed diagnoses of SLE to improve the quality of care for patients.

POSTER ABSTRACT 15

[T] Reducing the Incidence of Central Line Association Bloodstream Infection (CLABSI) at Harlem Hospital Center: A Performance Improvement Project

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Background: Hospital Acquired Infections (HAIs) are a major public health concern because of increased morbidity, mortality, and financial burden. Central Line Associated Bloodstream Infections (CLABSIs) are among the most troubling of HAIs. An estimated 71,000 CLABSI occur in the United States annually resulting in 33,000 deaths and approximately \$2 billion in costs. In 2010, Harlem Hospital Center, implemented the Institute for Health Improvement (IHI) CLABSI prevention bundle with outstanding results. Hospital wide CLABSI rate went from 4.5 (1st quarter 2011) to 0.0 (4th quarter 2011) per 1000 device days, and remained at 0.0 for years. In January 2015, the Center for Disease Control and Prevention (CDC)/National Health Safety Network (NHSN) changed CLABSI definitions, resulting in increased number of cases meeting CLABSI criteria. Our CLABSI rates increased from 0.0 /1000 line days to 1.85/1000 line days in 2015 and the CLABSI prevention bundle compliance was 96%. To address this patient safety issue, we partnered with hospital administration, medical teams, nursing staff, and infection control department with the aim of reducing the rate of CLABSIs by 50% in 1 year and achieve 100% compliance with the prevention bundle.

Methodology: We reviewed data from 2013. Using the information from the data, we formulated a fishbone diagram to identify the limiting factors to achieving this goal. Specific interventions implemented were to educate staff on 'best practice' which included: the use of Central Line Bundle (hand hygiene before and after catheter insertion or manipulation, maximal barrier precaution, chlorhexidine use for skin prep, daily review of necessity of lines at multidisciplinary rounds and timely removal of lines); Infection Control reviews of all CLABSI cases with clinical teams; nurses' empowerment to stop the insertion procedures if there is noncompliance with guidelines; staff conducts daily inspection of site dressing and document their findings; catheter hubs, needleless connectors, and injection ports are disinfected before accessing the catheter; and availability of the central line kits on the crash cart on all floors to limit running around during emergencies. Plan-Do-Study-Act (PDSA) cycles were used periodically to evaluate the impact of interventions implemented.

Results: In 2016, there were 6 CLABSIs hospital wide as against 11 CLABSIs in 2015 for a rate of 1.0 per 1000 line days compared to 2015 rate of 1.85 per 1000 line days. By September, 2017 CLABSI rate was 0.89 per 1000 line days. Compliance rate with central line bundle improved from 8 to 97% in the first quarter of 2016 and remained at that rate until September, 2017.

Conclusion: Evidence-based interventions are effective in preventing healthcare related infections, promoting high quality patient care and reducing hospital costs. Overall, we foresee a reduction in health care costs from limiting the incidence of CLABSI.

POSTER ABSTRACT 16

Review of Clinical CT Protocols to Meet the New ACR and the JC Standards: Our Experience Using the Plan-Do-Study-Act Cycle Tool

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Motivation: In USA, in the last few years, several healthcare accrediting bodies and states' Departments of Health started to request the CT scanners facilities to comply with periodic review of clinical CT protocols (ex. CA, TX, 2011-American College of Radiology (ACR), 2015- The Joint Commission).

Compliance is to be implemented in order to prevent situations where patients end up with radiation overdose from CT exams leading to higher cancer risks and/or deterministic x-ray radiation induced skin effects; and hence avoid class action lawsuits against clinics and hospitals housing CT scanners.

While there is no government limit on how much radiation dose practitioners can give a patient during a diagnostic CT exam since it's assumed that they weight the risks versus benefits, "higher-than-normal" doses need to be recognized and prevented by establishing acceptable limits and set in place mechanisms for periodic review of CT protocols technical parameters.

Methods and Materials: We designated a CT protocols review team (a supervising radiologist for each body part, a qualified clinical diagnostic medical physicist, a senior CT technologist and an administrator) and started with gathering a baseline database comprising of the critical technical parameters (24), from each current protocol (approx. 200 protocols per scanner), for each body part, for Adult patients, from a GE HD 750 64 slice CT scanner. A series of PLAN-DO-STUDY-ACT iterations were applied as follows: out of the 24 parameters, we identified "progress indicators" for our scanner (CTDIvol for Max mA (mGy) and Dose Efficiency (%)) and established a desired measurement goal for them. Following discussions with the team, "improvable technical parameters" were designated and modified in order to meet team's radiation dose and image quality target and then a new set of progress indicators were acquired and compared with initial ones.

Results: When our goal set for these progress indicators was not met, another PDSA cycle was implemented. When our goal was met or exceeded then we created a CT protocol book page with corrected information and approved it for distribution on all similar CT scanners at our institution for standardization of entire practice.

Conclusion: The Plan-Do-Study-Act Quality Improvement tool turns to be a promising tool in Radiology departments periodic review of clinical CT protocols to meet the new ACR and The JC standards.

POSTER ABSTRACT 17

[T] SweetCare: Improving Diabetes Outpatient Quality Measurements with Implementation of EMR Based "Macros"

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Diabetes Mellitus (DM) is an endemic chronic medical condition that requires a multispecialty approach, which much of the time is led by a primary care provider. Management of DM can be challenging due to the widespread effect of the disease on multiple organ systems in addition to the high level of morbidity that can result. Due to increased demands of seeing more patients, primary care physicians have ever decreasing time with their patients, yet patient's disease state remains complex. Thus, it may not be difficult to overlook certain guidelines when managing patients with DM. A set of quality measures has been established for the treatment of DM by the Ambulatory Care Quality Alliance [1]. The GW MFA currently tracks these diabetic quality measures for each resident's panel of patients. To improve our quality measure compliance, we were interested in implementing a checklist to remind residents of the guidelines when seeing diabetic patients in clinic. We developed a macro within the EMR which would allow for proper documentation and checklist during diabetic clinic visits. The aim of this study was to increase quality measure reporting by 20% over 3 months through the initiation of macros. Baseline data was obtained from our clinics quality measure data which included goals for the following: HgbA1c, blood pressure, cholesterol, immunizations, eye exam, and nephropathy laboratory work. Macros were created in the electronic medical record with national guidelines for screening and management of diabetics from the American Diabetic Association. These macros were shared with a sample of residents. The response to the use of macros was positive from the participating residents as they found it helpful in reminding themselves of the guidelines which are occasionally overlooked. The results of the intervention were favorable with 14% increase in quality measure reporting. Although we did not meet our initial goal of increase in 20%, the results were favorable. The next steps in this project are working closely with physicians who oversee the electronic medical records to extend the use of the macro to all physicians in the practice who manage

diabetes. Lastly, we hope to streamline the macros in order for the quality measures to automatically be uploaded in order to provide easier documentation.

POSTER ABSTRACT 18

[T] Understanding the Association Between Interprofessional Collaborative Practice and Patient Health Outcomes for Vulnerable Urban Populations: a Descriptive Analytical Study of Healthcare Provider Perceptions

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Purpose: Collaboration among different health professionals is essential for improving care quality as well as population health outcomes. Now widely designated as interprofessional collaboration, it consists of effective teamwork and communication that involves patients and families, and is based on a clear understanding of each health professional's roles and responsibilities on the healthcare team, and a deep appreciation for the value that all health professions bring to patient care. Yet it remained unclear how this type of collaboration works to influence the quality of care as well as patient health and system outcomes, especially for socioeconomically disadvantaged and vulnerable urban populations. This project sought to elucidate this phenomenon.

Methodology: The project used a cross-sectional descriptive analytical methodology. Drawing from a prior conceptual model developed in a previous qualitative study on the variable relationship of interest, an online survey was created to capture the perceptions of health professionals on the relationship between interprofessional collaboration, care quality, and patient health and system outcomes. The survey, which consisted of 48 questions with responses measured on a 5-point ordinal scale, was administered to 150 health professionals, so that the inductively created conceptual model could be validated deductively using a larger sample size than was possible in the qualitative study that provided the variables for the survey. Statistical regression methods were used to control for the influence of personal characteristics of the participants on their perception of the model.

Results: The survey and regression analysis revealed that the extent to which healthcare professionals are satisfied with their careers is the most important factor that influences their perceptions of this model. Other important predictors include the type of healthcare profession, gross annual income, and whether a healthcare professional had worked in patient care for at least 6 months. Prior participation in interprofessional activities, type of healthcare delivery model at one's institution, and type of clinical care setting did not influence perceptions of the conceptual model. Building trust through interprofessional collaboration, facilitating sharing in care coordination, and enhancing reciprocity in patient care – all of which are components of the theory of cognitive

social capital – emerged as the variables that sequentially explain the perceived relationship between interprofessional collaboration and patient health and system outcomes.

Conclusion: This study showed that, from the perspective of health professionals, cognitive social capital is the theoretical foundation underlying the relationship between collaboration and health and system outcomes, and it helps explain why collaboration works or does not work in different settings. Additional research using more objective data sources – such as participant observations that can facilitate the measurement of behaviors in practice, linked to real-world patient health outcomes datasets – is needed to determine whether interprofessional collaboration can truly impact patient health and system outcomes.

POSTER ABSTRACT 19

Using a LEAN and Six Sigma Intervention to Decrease Wait Times, Engage Employees, Decrease Violence, and Improve Patient Satisfaction in an Urban Obstetrical and Gynecological Clinic in Brooklyn, New York

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Introduction: The clinic was considered the most unpleasant place for patients and the worst duty for doctors and midwives. The patients would often scream about the wait and security guards would rush down to protect employees from threatened harm. It was hard to tell how long people were waiting because there were no visual clues that told clinic employees nor patients how long anyone had been waiting and who was in the queue. There was just a waiting room of angry patients and often angry patients would physically threaten clinic staff. We learned LEAN and Six Sigma and decided to apply these methods in a study.

Methods: We designed a data tool that moved around the clinic on a shadow chart. Each step of the patient's journey through the clinic was documented: time in and time out. Value stream mapping was carried: 1) defining service areas, 2) gather the team and walk the process, 3) complete a current state map, 4) identify value and waste, 5) complete a future state map, and 6) create our vision, strategy, and plan. We collected the data for two months, conducted a KAIZEN event, and gathered the data for two months after the event.

Results: Two complete weeks were chosen from the pre-intervention period and analyzed to set priorities for the KAIZEN event. Two complete weeks were chosen post-event. We analyzed how the patients flowed through clinic, how long patients spend at each station, whether patients arrive on time, if provider visits were longer or shorter than fetal testing and ultrasound visits, did doctors and midwives differ in time spent with patient or total time for the patient visit, did we have enough employees, and did we have enough rooms. We performed the KAIZEN event and analyzed these variables post-event.

Post Kaizen we standardized the work, calculate arrival time and Takt time, examined work sequence and cycle times, update the value stream map, examined spaghetti diagrams, and we sorted, simplified, swept, standardize, and built systems to sustain change. There was better flow through clinic, the total time in clinic did not change but the standard deviations for times decreased, there was no weekday or time of day that differed, and the staff were proud of their work.

Conclusion: The pre-event data substantiated the patients' views and explained their complaints. The intervention engaged the staff in improving the clinic and the patients could see the improvements as we worked to change. The violence stopped.

POSTER ABSTRACT 20

Utilizing Standardized Order Sets to Improve the Care of the Septic Patient

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Catholic Health Services of Long Island (CHS) is an integrated health care delivery system with some of the region's finest health services agencies. CHS includes six hospitals that provide care extending from the beginning of life to helping people live their final years in comfort, grace and dignity.

Background: In 2016, the definition of Sepsis was updated in JAMA to be a "life threatening organ dysfunction caused by a dysregulated host response to infection" (1). For the purposes of this abstract, Sepsis is defined as Sepsis, Severe Sepsis, and Septic Shock. The goal at CHS was to optimize workflows within the electronic health record to increase compliance with standardized ordersets, which have been shown to lead to decreased mortality associated with Sepsis (2).

Given the high prevalence and mortality of Sepsis in our community, CHS developed a System-wide Sepsis Program utilizing evidence-based, best practice methods for early recognition and treatment to prevent potential complications related to Sepsis. This was also due to New York State's mandate requiring hospitals' compliance with Severe Sepsis/Septic Shock treatment focused around 3-hour and 6-hour bundles.

Since 2011, the team has developed and expanded how care of a Septic patient is delivered. Although the concept of ordersets is not novel, CHS created standard ordersets for Neonates, Pediatrics, and Adults for utilization throughout all six hospitals. The ordersets were designed within the electronic health record to streamline the provider's workflow, allowing ordering of appropriate treatments in designated timeframes.

CHS built a System-wide Sepsis Executive Steering Committee which supports data gathering, coordination of resources, orderset management, performance improvement, and creating and reviewing of educational materials. This allows each facility to tailor the resources based on their

needs, but have continual support to deliver the appropriate standard of care. Each facility has an established core sepsis team that continually monitors the program.

Results: Electronic health record ordersets were first released at the end of 2014. Provider orderset usage compliance in 2nd quarter (Q2) of 2015 was at 46.5%, bundle compliance was 45.2%, and Severe Sepsis/Septic Shock mortality was 25.9%. Since then, the team continued to provide education to the providers, streamline workflows in the electronic health record, and optimize orderset design. As of Q3 2017, order set compliance increased to 76.9%, overall bundle compliance increased to 65.8%, and Severe Sepsis/Septic Shock mortality decreased to 20.7%.

Conclusion: CHS successfully increased compliance with Sepsis order sets through a System-wide approach. We noted an 47.1% improvement in order set compliance from Q2 2015 to Q4 2017. Conversely, there was 22.3% mortality decrease in the same time period. Further work is required to continue to define the relationship between order compliance and mortality rates in patients with Sepsis.

POSTER ABSTRACT 21

[T] Variability in Anti-Epileptic Medication Availability and Administration Warrants Standardization Across an Integrated Health System

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Introduction: Epilepsy and status epilepticus may result in patient morbidity and mortality. Complications from these conditions may be avoided with timely administration of antiepileptic medications. Antiepileptic medications at our institution are mostly accessible via Pyxis TM dispensing systems. However, these systems may often lack key medications. Treatment variations also exist among caregivers and is compounded by their unfamiliarity of available medication. These factors may hinder the effective treatment of patients, therefore increasing the potential risk of brain injury and death.

We evaluated epilepsy caregivers with the aim of standardizing antiepileptic medication awareness, availability, and administration times.

Methods: We surveyed 41 caregivers on a neurology floor (NF), epilepsy monitoring unit (EMU), emergency department (ED), and neurosurgical intensive care unit (NSICU). Caregiver demographics (age, caregiver occupation, training history), awareness of antiepileptic medications in Pyxis, and estimated and goal times for status epilepticus treatment were collected. IBM SPSS Statistics was used for data analysis.

Results: We received 22 responses from 4 attending physicians, 14 neurology residents, and 4 mid-level caregivers. Three surveys were discarded due to incompleteness, resulting in 19 analyzed responses.

Demographics: Median age was 30-39 years old. Median post-fellowship experience for attending physicians was 6-10 years. Caregiver unit distribution was as follows: NF only (n=3), EMU only (n=3), NSICU only (n=1), NF and EMU (n=12). Several caregivers from NF and EMU also work in ED (n=4) and NSICU (n=3).

Awareness: Of surveyed caregivers, 80% on NF (n=15), 87% in EMU (n=15), 100% in ED (n=4), and 100% in NSICU (n=4) report lacking awareness of medication availability in Pyxis.

Availability: Most caregivers report requiring additional medications: 73.3% at NF (n=15), 60% in EMU (n=15), 75% in ED (n=4), and 75% in NSICU (n=4) report requiring additional medications. Common medications in NF and EMU include phenytoin (40.0%, both services), valproic acid (26.7%, both services), levetiracetam (20.0%, NF; 13.3%, EMU), and benzodiazepines (20.0%, both services).

Treatment Time: Caregivers report medication retrieval delays due to lack of medication availability. 94.7% of caregivers (n=19) report ideal medication retrieval time <3 minutes. However, 40.0% and 20.0% of caregivers report >5 and >7 minutes retrieval times respectively in NF (n=15). Similarly, 36.3% and 18.2% report >5 and >7 minutes retrieval times respectively in EMU (n=15).

Conclusion: Our results show epilepsy caregivers lack awareness of available antiepileptic medications in Pyxis and rapid access to medications. Standardization of medication availability and access is suggested for better management of epilepsy patients.

POSTER ABSTRACT 22

The VeriStrat® Test as a Prognostic Tool in the Treatment Decisions for Poor Performing NSCLC patients

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Purpose: To assess the impact of VeriStrat® testing and other prognostic factors on treatment decision making for advanced non-small cell lung cancer (NSCLC) patients with poor performance status (Eastern Cooperative Oncology Group (ECOG) performance score 2-4). The VeriStrat® test is a blood-based proteomic test intended to help guide treatment decisions for patients with NSCLC. It classifies patients into two categories, VSGood and VSPoor. Patients classified as VSGood have a favorable prognosis and benefit from receiving active treatment whereas patients classified as VSPoor have a more aggressive cancer and less favorable prognosis.

Methods: As part of the INSIGHT observational trial, physicians provided pre and post-testing treatment recommendations and actual treatment selections alongside deciding factors. This subgroup analysis evaluated the impact

of VeriStrat test results on treatment decisions for patients with performance status (ECOG) scores of 2-4 at time of study entry. Estimated costs of treatments were calculated using a Medicare perspective.

Results: 151 patients with ECOG scores 2-4 had sufficient information for analysis. Prior to testing, the majority of patients planned to receive systemic treatments (89%). VeriStrat testing stratified 42% of patients as VSPoor and 58% as VSGood. After receipt of test results, patients with VSGood and VSPoor test results underwent significantly different treatment plans. As expected, a smaller portion of VSGood patients were referred to best supportive care (BSC) than VSPoor patients (9% and 23%, $p=0.027$ respectively). In the subgroup of patients with ECOG scores of 3-4 the difference was larger with 9% of VSGood as opposed to 58% of VSPoor patients referred to BSC ($p=0.041$). In a multivariate analysis of referral to BSC controlling for factors recognized in clinical guidelines as predictors of patient prognosis including patient age, stage of disease, histology, ECOG score, and gender, as well as line of therapy, VeriStrat remained a significant predictor of referral to BSC (OR: 1.07, $p=0.002$) alongside age (OR:1.01, $p<0.001$), ECOG score (OR: 1.03, $p=0.015$), and number of previous lines of therapy (OR: 1.02 $p=0.04$). The multivariate logistic regression results showed that VeriStrat test results remained a significant predictor of referral to BSC.

Conclusion: The VeriStrat test is a clinically validated test that is prognostic across treatments in patients with NSCLC. In a real-world setting, VeriStrat helps inform conversations about BSC for patients with poor performance statuses. In multi-variate analyses, VeriStrat remains a significant predictor of referral to BSC in patients with poor performance status, optimizing timing of palliative care and decreasing overtreatment when possible. Optimizing BSC and avoiding overtreatment creates an expected pharmaceutical expenditure savings of \$955 per patient within the first 30 days of treatment.

POSTER ABSTRACT 23

Managing Ethical Issues in Quality Improvement Projects

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Background: Healthcare organizations are strongly encouraging their staff to undertake quality improvement projects (QIPs) to improve patient care. However, organizations are not consistently establishing structures to oversee QIPs carried out by staff and are not using mechanisms to check if QIPs actually do produce sustained improvements that benefit patients or patient care. Healthcare organizations also are unable to ensure that any ethical issues embedded in the QIPs undertaken by staff are recognized and handled appropriately.

Any activity that poses a burden or a risk of psychological or physical harm to a patient should have ethical oversight, including a QI project. In addition, a poorly designed QIP is itself an ethical issue: The project is unlikely to achieve valid

and reliable assessment; may not produce improvements in the quality or safety of patient care; and wastes time and money.

Methods: We carried out a review of published literature on the subject of ethics and quality improvement to identify:

- why healthcare organizations should have oversight mechanisms for QIPs in relation to risks to patients, patient care or the organization
- how QIPs are distinguished from research projects
- possible ethical issues in QIPs
- possible ethical issues in structured programmes of QIPs
- strategies, structures, processes and support for managing ethical issues in QIPs and programs in healthcare organizations
- how research projects on the QI process should be handled

We analysed and synthesized the literature to identify approaches to the five issues we raised.

Outcomes: We derived guidance on the issues identified for the literature search. The guidance has been published for NHS organizations in England and includes:

- why it is important to provide for ethical oversight of QIPs
- tools to distinguish QIPs and research projects
- processes to identify and manage ethical issues in QIPs
- processes to identify and manage ethical issues in planned programmes of QIPs
- organizational structures and systems needed to oversee ethics in QIPs
- how to handle research projects on QI.

Simple checklists for screening proposals for QIPs and for reviewing the findings of these projects were developed.

The guidance has been published by the Healthcare Quality Improvement Partnership (HQIP), available at <http://www.hqip.org.uk/resources/ethics-for-clinical-audit-and-qi/>

Conclusion: Corporate oversight of QIPs is essential. A corporate structure should ensure that QIPs are carried out in every service. A corporate process should require screening of proposals for QIPs to verify the appropriateness of the following: the objectives to be achieved; measurement and change methodologies; intended benefits and potential risks, particularly to patients; and the value of the activity to patient care. A process should also screen the results of a project to ensure that needed improvements in the quality or safety of patient care are actually achieved and sustained.