GME ON-CALL

Message From the Co-Chairs
Alan Woolf, MD, MPH, Debra Boyer, MD

We continue to host a variety of exciting events in medical education here at Boston Children's Hospital this Spring. The final session of the Strategies for Academic Success (SAS) seminars for clinical fellows was held on May 9th. More than 30 trainees have completed this program this year. We look forward to continuing to revamp the SAS program for the next academic year to provide innovative programming for our fellows.

The Office of GME organized a celebration of GME Day on May 11th for a seventh year. This year's GME Day included a variety of events, including a scientific abstract competition, grand rounds presented by **Dr. George Thibault,** the president of the Josiah Macy Jr Foundation, and small group meetings with hospital leadership, pediatric residents, medical educators, and training program directors and coordinators. Thanks especially to **Tery Noseworthy** and **Katelynn Axtman** who devoted their time and energies to organizing this annual event and to making sure that all went smoothly. Read about the details of the grand rounds presentation and the scientific abstract competition elsewhere in this newsletter. The Academy at BCH collaborated with the Office of GME to present two afternoon workshops on 'Gaining new perspectives through peer observation of teaching' (led by educator **Lori Newman, M. Ed**) and 'Asking questions to enhance learning' (led by **Dr. Jonathan Hausmann**). Both workshops attracted over 30 participants and both provided useful information on effective teaching strategies to our educators.

On May 18th and 19th, the Office of GME hosted a return site visit from **Drs. Elizabeth Wedemeyer and Robin Dibner** from the ACGME in the follow-up of its Clinical Learning Environment Review (CLER) program. The previous assessment was made in 2014 and provided BCH with some guidance for improving the infrastructure within which it conducts its educational mission. Visitors attended shift hand-offs on the wards and intensive care unit and made walk-rounds with faculty and trainees. Meetings were held with trainees, core faculty, training program directors, and Hospital administration. A verbal assessment was offered to the Hospital's leadership at the close of the visit, and a written report will be produced in about 8-12 weeks.

The final GME Committee meeting for this academic year will be held in the Garden Conference Room on Wednesday, June 8th, at 4:00pm.

Comings & Goings: We want to welcome **Lori Newman, M.Ed** to the new Department of Medical Education as the Associate Chief of the Academy at BCH. Dr. Newman was previously the medical educator at the Beth Israel Deaconess Medical Center. Lori brings an abundance of creativity and a wealth of experience in faculty development to her new position. Also **Ms. Angela Lam** has been hired as the new senior administrative assistant for the new BCH Department of Medical Education.

Inside this issue:

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Dr. Christine Lee is the new program director for the Pediatric Transplant Hepatology program; she takes over the role from Dr. Maureen Jonas, who remains in the program as faculty. Thanks to Dr. Jonas for her leadership in the program.

Welcome to **Rachel Flaherty**, the new fellowship coordinator in Pediatric Rheumatology; she takes over from Kimberly Parker, who has left BCH to pursue other opportunities.

We also want to thank **Ms. Janet Shahood** for her service as a manager for the Department of Medicine. She has done a tremendous job for both house-staff and faculty over the years as one of their advocates in the department; and we wish her the best in her new role in the Department of Nephrology.

House-staff Transitions: Once again it is springtime at BCH and that always signals a time of change in GME. Residents and fellows who are finishing their training will soon be packing up and moving on to even greater challenges and opportunities in new professional positions. We want to thank them for their service during their training at BCH, as well as enlivening our Hospital with their energy, enthusiasm, spirit of inquiry, and resourcefulness. And we wish all of them well in their future pursuits, just as we are preparing the welcome for new house-
staff arriving on orientation day on July 1st.

Thibault Describes GME Reform

Dr. George Thibault, president of the Josiah Macy Jr Foundation, was the grand rounds speaker at Boston Children's Hospital's May 11th GME Day. In his talk, he presented compelling arguments for how and why medical education should be re-engineered in the U.S. He first described the history of previous attempts at reform, beginning in the 1940's. More recently, calls for change gained momentum in the 2000's after the Institute of Medicine published its 'Bridge To Excellence' monograph in 2003, prompting other influential groups, such as MEDPAC, COGME, and the Carnegie Foundation to issue their own calls for improved standards of training over the next 8 years.

Dr. Thibault pointed out the timeliness of new efforts at GME reform, citing societal forces: 1. changing demographics of the population, 2. an evolving health care delivery system, 3. the advent of new technologies, including electronic information management, 4. the renewed focus on patient safety and the quality of clinical care, 5. the maldistribution of physician geography and specialty mix, and 6. the unsustainable costs of health care. He pointed out GME's current tensions: autonomy vs supervision, service vs education, duty hours vs continuity, subjective vs objective trainee evaluation. He asked the defining questions of who should supervise, teach, and evaluate residents and to whom are we all accountable for the quality of their training?

Finally, Thibault listed and gave details on 10 goals of GME reform:

1. New content for new competencies

2. Greater diversity of patients, illnesses, and site of training

3. Inter-professional, team training

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Thibault on GME Reform continued

4. Flexibility and individualization of the training experience

5. Enabling integration of new technologies

6. Greater engagement of patients and families

7. Alignment of specialty choice and practice geography with need

8. Smoother transitions from undergraduate to graduate medical education

9. Greater accountability to the public

10. Better alignment of outcomes with societal needs

Dr. Thibault called for more institution- al and faculty engagement in training in order to optimize the learning environ-

Dr. Thibault speaking with Dr. Leichtner and Sandra Fenwick

ment. He cited the pressing need to support faculty for their teaching efforts and for hospitals to better align their mission and goals in education with the other goals of the enterprise. This clarion call to action by this distinguished national leader in education was well received by Dr. Thibault's audience.

Coordinator's Corner – Professional Development Opportunities for Coordinators

Tery Noseworthy, C-TAGME

As a residency/fellowship coordinator you are focused on the education of your residents, fellows and faculty, but what about you? What is available to you to advance your skills as knowledge as a coordinator?

The first place to start is the monthly Residency/Fellowship Coordinators meetings, held on the second Wednesday of every month; these meetings are a great place to learn about various topics that affect all training programs as well as network with other coordinators at Boston Children's Hospital.

The Hospital's Learning and Development department offers a wide variety of courses to all employees, most at no charge. You can take classes that will improve your computer skills, teach you to better manage difficult conversations and develop your management skills, among other things. You can even take Lean Six Sigma courses, which teach you techniques and tools for process improvement. Check NetLearning to see what is currently available.

If you are working for an ACGME-accredited program, the ACGME offers educational opportunities for coordinators. In the summer the ACGME offers two day workshops for coordinators who have been in their position for less than 3 years; these workshops are run by the specialty Residency Review Committees and cover accreditation basics.

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Coordinator's Corner continued

In addition, the ACGME offers an Annual Educational Conference for both program directors and coordinators; this three day event covers ACGME requirements and showcases best practices from other programs and institutions. More information on both of these programs is available on the ACGME's webpage, under "Meetings and Events">In addition, you may want to consider TAGME certification; the National Board for Certification for Training Administrators in Graduate Medical Education offers certification for Institutional GME Administrators, Administrative Directors, and Program Administrators or Coordinators of accredited ACGME residency and fellowship programs. For more information on what is involved in becoming certified visit www.tagme.org.

Applying Adult Learning Principles to Clinical Teaching

Lori Newman, M.Ed., Director of Professional Development in Medical Education-Department of Medical Education

The late Malcolm S. Knowles, Ph.D., one of the foremost educators in the U.S., is considered the father of adult learning or *andragogy.* Knowles established six core adult learning principles upon which effective teaching is based. The principles are:

1. Adults need to know why they need to learn something new
2. Adults are autonomous and feel responsible for their own decisions
3. Adults bring to any learning experience a wealth of prior life experiences and mental models, which must be valued and respected
4. Adults need to be ready to learn and actively engaged in their learning
5. Adults need to be oriented to learning, and learn best through problem solving
6. Adults need to be intrinsically or extrinsically motivated to learn ("I learn because I want to")

There are a number of ways to apply these six learning theories to clinical teaching practice. For example, when meeting residents for the first time, it is best to determine the trainees' backgrounds, prior experiences, and interests in order to shape the learning encounter to best address their educational needs. Furthermore, by getting to know the learners, and allowing them to share their prior knowledge and skills, an attending can quickly conduct a mini-needs assessment and determine where the learners are in their learning trajectory. Through a mutually-respectful exchange of educational objectives and learners' interests, known as an "educational contract," residents become an educational partner with the attending and will feel ready and motivated to learn. An abridged educational contract can be used at the start of a single teaching session by having the facilitator state the educational objectives, indicate why it is important to learn the topic, and ask the residents what specific questions they would like to see addressed.

Residents, like all adults, need to feel autonomous when practicing a new skill or behavior. In medicine it is necessary to allow for graduated autonomy so residents gain the confidence needed to care for patients on their own.

Key Websites

ERAS: www.aamc.org/eras/

ACGME: www.acgme.org

AMA: www.ama-assn.org/

NRMP: www.nrmp.org

TAGME: www.tagme.org

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Total # of CODA-accredited programs sponsored by BCH: 1

Total # of residents in CODA-accredited programs at BCH in AY2016: 8

Total # of CODA-accredited sponsoring institutions in Massachusetts: 7

Total # of CODA-accredited programs in Massachusetts: 33

2016 Scientific Research Abstracts Competition: GME Day

Ariel Winn, MD

The annual scientific abstracts competition in medical education was held on GME Day again this year. Faculty and trainees were invited to submit abstracts of their ongoing scientific investigations related to medical education. This year 10 medical education abstracts were chosen for presentation during GME Day in the Enders first floor lobby. Those investigators who have previously won quality improvement grants from the Office of GME to pursue their research projects were also required to submit their funded works in progress in the competition. The final list of accepted abstracts' titles and authors is presented below. One of the winning abstracts was submitted by Drs. Jonathan Levin and Jonathan Hron and is titled "Resident Dashboard using Childrens360."

The other winning abstract was submitted by Dr. Kelsey Miller, Mr. Michael C. Monuteaux, Dr. Saima Aftab, Mr. Alex Lynn, Dr. Debra Hillier, and Dr. Joshua Nagler and is titled "Randomized Controlled Trial of a Novel Video-enhanced Advanced Airway Curriculum for Pediatric Residents."

New Interprofessional Education Initiative at BCH

Beth Rider

Boston Children's Hospital is one of seven national sites selected to train faculty leaders in Interprofessional Education. Elizabeth Rider, MSW, MD, Division of General Pediatrics, Department of Medicine, and the Director of Academic Programs for BCH's Institute for Professionalism and Ethical Practice, has received funding from the Josiah Macy Jr. Foundation for a new initiative, *"Faculty Development for the Interprofessional Teaching of Humanism."* William Branch, Jr., MD at Emory University School of Medicine is the Principal Investigator and leads the 7-site national project.

The 2-year project aims to build enduring trusting relationships among interprofessional education (IPE) faculty leaders who will serve as collaborative role models committed to creating successful strategies to educate others about IPE and to develop future generations of IPE leaders.

Dr. Rider, co-PI and site leader for the Boston Children's Hospital/Harvard Medical School site, will lead the development of a faculty education fellowship in interprofessional education, modeled after the successful BCH Faculty Education Fellowship in Medical Humanism and Professionalism [LINK: http://ipepweb.org/the-faculty-education-fellowship-in-medical-humanism-and-professionalism] that has 21 current and past Faculty Education Fellows across BCH.

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New Interprofessional Education Initiative at BCH continued

Additional participating sites include the University of California San Francisco School of Medicine, David Geffen School of Medicine at UCLA, Yale School of Medicine, University of Massachusetts Medical School, Indiana University School of Medicine, and University of Minnesota Medical School. At each site, two consecutive groups of 8 – 10 education leaders from at least three professions will participate in ongoing IPE faculty development sessions. Each site will plan and implement a humanistic IPE project at their institution.

Housestaff Council for Patient Safety and Quality (HCPSQI) Improvement Newsletter

Q&A with Dr. Chris Landrigan

Interview conducted by: Dr. Robin Horak

Tell us a little bit about your experience with quality improvement and your experience with QI initiatives here at Boston Children's.

I was completing my residency in the 1990s, just as hospital medicine as a field was beginning and the To Err is Human report was published from the Institute of Medicine. I saw an opportunity to develop a career in hospital medicine focused on safety. My first foray in the field came from participating in a systemic review of medication safety at Boston Children's Hospital which showed higher rates of error than in adult hospitals. After completing the Harvard Wide Health Services Research Fellowship, I took stock of my interests in safety and personal experience with errors stemming from fatigue and settled on studying sleep deprivation and errors of medical personnel.

Chris Landrigan, MD, MPH

How have trainees played a role in your projects?

For me trainees bring new energy and unique research ideas to my area of inquiry. The best partnerships have come from trainees with genuine interest in a question they develop, whose question is one on which I can provide guidance to help them answer.

What are your thoughts about the emerging role of PSQI efforts in our field and why it is valuable for trainees to involve themselves in PSQI efforts around our institution/region?

Patient safety remains a major problem in the United States and beyond. It is an incredibly diverse field with a wide range of opportunities to study and improve the quality of care, both locally and beyond. Trainees often have unique insights into the vulnerabilities in our systems of care, and therefore are powerfully positioned to drive change.

For trainees looking for their first start in the world of quality improvement, what are some words of wisdom?

When I was in training, I was lucky enough to find a mentor whose interests aligned with mine, but were not exactly the same. I think this is a key point.

By the Numbers

Total# of ACGME-accredited programs nationally: 10,103

Total # of residents/fellows in ACGME—accredited programs in Massachusetts: 5617

Total # of residents/fellows in ACGME-accredited programs nationally: 127,472

Total # of ACGME-accredited programs in Massachusetts: 427

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Q & A with Chris Landrigan continued

It is critical to find a mentor who can help you build new skills and find funding for your work, but your research interests do not need to be identical. The other key for trainees to consider as they look for opportunities in QI is to gain both operational and research skills. To be truly successful in PSQI you need to do both. Look for opportunities to gain experience in operations and research. Some programs that I think are particularly worth considering are the clinical effectiveness program at the Harvard School of Public Health, the Harvard-wide Health Services Research Fellowship, courses and programs offered through CRICO, and courses offered through the Institute for Healthcare Improvement (IHI).

Any other thoughts you want to share?
At its heart PSQI is about changing the system of healthcare. We have to break bad habits in our field. Even making changes that seem simple on the surface can be an uphill battle. Creating long lasting change is difficult, but given that medical errors are probably the 3rd leading cause of death in our country, it is critical and well worth the challenge.

At its heart PSQI is about changing the system of healthcare. We have to break bad habits in our field. Even making changes that seem simple on the surface can be an uphill battle. Creating long lasting change is difficult, but given that medical errors are probably the 3rd leading cause of death in our country, it is critical and well worth the challenge.

High Reliability at Boston Children's Hospital...What is it all about?

Boston Children's Hospital has partnered with Healthcare Performance Improvement (HPI) to engage in a comprehensive process to improve our culture of reliability and safety to achieve and sustain reductions in events of preventable harm to patients and employees. Reliability means performing activities consistently as intended over time. A culture of safety refers to a work environment that holds safety – protection from harm – as a core value and promotes behaviors that result in safe, reliable outcomes. This process will build upon our past successes in safety and quality and will provide us with tools to transform the way we think about improving the health of our patients and the communities in which we operate.

Deb Pappas, instructor, at High Reliability Training

HPI methods are based on the knowledge, learning, and best practices of high-reliability organizations such as nuclear power, aviation, and manufacturing. These high-reliability organizations recognize that optimizing outcomes requires a focus on system design and human performance. These industries have made great improvements in safety and quality over the past two decades, and now we want to bring some of their ideas and concepts into our complex, high-risk work environment to reduce serious safety events.

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High Reliability at BCH continued

The first visible signs of this effort for all BCH employees is Error Prevention Training. The training was held from October 2015 through June 2016 both on main campus and at satellite locations. Boston Children's Hospital has certified over 100 front-line and operational leaders to serve as trainers in order to show a visible commitment from leadership to the initiative. At each 4-hour training session, participants are introduced to high reliability concepts as well as an Error Prevention Toolkit which consists of 3 core safety behaviors and 9 error prevention tools.

The goal of the training is for all staff to begin using this common safety language, behaviors, and tools in order to reduce errors, improve communication, and prevent harm to both our patients and employees. Enrollment in Error Prevention Training is available through NetLearning.

To date, BCH has trained over 5,000 employees and has seen improvements in staff committing to speaking up for safety, communicating clearly, and paying attention to detail.

The reduction of errors is key to our high reliability journey, which will have positive impacts on not only safety, but quality, satisfaction and overall operational performance. We urge you to take this initiative to heart.

The PSQI Blitz brought to you by the House Staff Council for Patient Safety and Quality Improvement:

Quick hits on new literature being published in the areas of quality improvement and patient safety….
Brought to you by the HOUSESTAFF COUNCIL FOR PATIENT SAFETY AND QUALITY IMPROVEMENT

STUDY: Howell V, Schwartz AE, O'Leary JD, et al. The effect of the SQUIRE (Standards of Quality Improvement Reporting Excellence) guidelines on reporting standards in the quality improvement literature: a before-and-after study

Source: *BMJ Qual Saf 2015*

Background context:. The SQUIRE guidelines were developed to provide a comprehensive framework for reporting Quality Improvement (QI) projects in the healthcare literature.

Aim of the study: To determine if the SQUIRE guidelines improved the completeness of reporting in the QI literature since their publication in 2008.

Methods: Before-and-after evaluation of QI articles selected from four prominent journals of healthcare quality. None of these four journals make adherence to the SQUIRE guidelines mandatory for the reporting of QI projects. Twenty-five articles published in each of two time periods (2006-2008 and 2010-2011). The two years in between the two time frames were excluded to allow time for guideline dissemination and implementation. Articles were independently evaluated by two investigators. The primary outcome was the number of SQUIRE statements (out of 50) addressed by the authors.

Results: The mean (SD) number of SQUIRE statements completed by the authors before was 20.2 (5.0) vs. 20.4 (7.0) after. There was no significant difference between both time periods (p=0.9).

Conclusion: There was no overall improvement observed in the completeness of reporting of QI projects after the publication of the SQUIRE guidelines.

What was the explanation for why the SQUIRE guidelines did not improve the completeness of reporting in the QI literature?

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The PSQI Blitz continued

- Too early to detect improvements, SQUIRE statement needs to be central in the planning and development phases of QI projects
- Too few journals examined, future studies could look across a wider selection of journals

Guidelines have not been optimally implemented, next iteration will be published in 2015

What are the limitations? Small sample size, lower number of QI project published before SQUIRE, reviewers not blinded to publication date, all 50 statements given equal weight

STUDY: Agulnik A, Forbes PW, Stenquist N, Rodriguez-Galindo C, Kleinman, M. Validation of a Pediatric Early Warning Score in Hospitalized Pediatric Oncology and Hematopoietic Stem Cell Transplant Patients

Source: *Pediatric Crit Care Med*, February 2016

Background context: The pediatric early warning score (PEWS) was designed to identify children at risk of clinical decline in order to prevent cardiopulmonary arrests in pediatric hospitalized patients. PEWS combine vital signs and exam findings with parental and staff concern. Its effectiveness has not been validated in high risk populations, such as pediatric oncology patients.

Aim of the study: To validate PEWS' ability to predict unplanned PICU transfer in hospitalized pediatric oncology and hematopoietic stem cell transplant (HSCT) patients.

Methods: Retrospective matched case-control study conducted at our home institution, Boston Children's Hospital comparing the highest documented PEWS within 24 hours prior to unplanned PICU transfers. Cases were 110 hospitalized pediatric oncology patients that required PICU transfer. Controls were 220 patients matched for age, service (oncology or HSCT) and length of stay who remained in the oncology wards. Need for transfer was determined by a PICU physician called to evaluate the patient. Logistic regression was used to explore the relationship between unplanned PICU transfer and the maximum PEWS from the 24-hour period of interest, as well as for the individual components of the PEWS. PEWS' discriminative power was estimated with area under the receiver operating characteristic (AUROC) curves. Survival analyses were employed to examine the relationship between risk of death among patients transferred to the PICU and maximum PEWS.

Results: PEWS was highly correlated with the need for an unplanned PICU transfer overall (AUROC 0.96) and the oncology and hematopoietic stem cell transplant groups individually. Sensitivity and specificity in predicting the need for unplanned PICU transfer were 66 percent and 98 percent, respectively, when a threshold score of 5 was used. Sensitivity improved to 86 percent with preserved specificity (95 percent) when the threshold was lowered to 4. All individual components of the PEWS independently correlated with the need for unplanned transfer to the PICU – the presence of staff or family concern had a larger effect size than the physiologic components. The PEWS scores among cases were significantly increased from baseline 11 hours prior to PICU admission, much earlier than the timing of the PICU consultation, which occurred on average only 3 hours prior to transfer. The overall mortality rate of patients with unexpected PICU admissions was 15 percent. Patients with higher PEWS scores (6 or greater) had increased PICU mortality (p = 0.028) and length of stay (p = 0.004).

Conclusions: PEWS is an effective tool to identify pediatric oncology and HSCT patients requiring unplanned PICU transfer for clinical deterioration, with significantly higher scores among this population occurring hours in advance of the average notification and consultation of the PICU team. There is an association between higher scores and PICU mortality.

What are the limitations? The PEWS score was already in place at the time of this study, meaning it may have influenced decisions about which patients warranted evaluation for transfer to the PICU. Also, this was a retrospective study that relied on documented PEWS that could have been inaccurate or missing. Finally, the case and control patients differed in the reasons for admission, so likely had different underlying risks for unplanned PICU transfer.

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Authors: Jonathan Levin, MD[1] and Jonathan Hron, MD[2]

[1] PGY-3, Boston Combined Residency Program (Boston Childrens Hospital/Boston Medical Center).
[2] Department of Medicine, Boston Childrens Hospital.

Title of Project: Resident Dashboard using Childrens360

Type: Work in Progress, QI

Background: Feedback in residency is focused on subjective evaluations of performance, but pediatric residents receive little data on case-volume by diagnosis, particularly compared to peers. Objective measures are increasingly used to demonstrate high-value care in medicine, including reporting on providers' total case volume and outcomes. Despite this, reporting these objective measures are largely omitted from residency training programs. While ACGME case logs have been developed and described in surgical residencies," little has been described in medicine or pediatric residencies, where involvement in cases by diagnosis may be more difficult to track over time.

Hypothesis: We believe that a resident dashboard to report objective number of encounters by diagnosis would be a useful tool for feedback to residents about their range and depth of exposures in training.

Methods/Results: We queried an enterprise data warehouse, BostonChildrens360, which aggregates data daily from multiple hospital systems including the electronic health record and registration and billing systems. We searched for patient encounters during which a given resident had contributed to a note or form, including sign-out documentation. A report was generated including a list of patients along with their visit date, age, department, and associated billing diagnoses.

Dr. Jonathan Levin

Results were summarized in a visual dashboard using BostonChildrens360 that includes a graph of patient encounters by venue as well as a heat map, which displays diagnoses (using ICD9 or ICD10 codes) based on the frequency they were encountered by the resident (Figure 1). Filters allow the user to search for specific diagnoses (based on frequency or code), patients or venues of care (Figure 2).

Next steps: (1) Reporting individual and aggregate data for numbers of encounters under a defined list of diagnoses, determined by ACGME objectives. (2) Comparing individual and aggregate resident data. (3) Reporting other outcome measures such as LOS and readmission.

Gow, KW et al. The ACGME case log: general surgery resident experience in pediatric surgery. *J of Pediatric Surgery,* 2013. 48(8): 1643-9.
Thurston, DF. The general surgery chief resident operative experience: 23 years of national ACGME case logs. *JAMA Surgery*, 2013. 148(9): 841-7.
https://www.acgme.org/acgmeweb/tabid/274/DataCollectionSystems/ResidentCaseLogSystem/CaseLogsStatisticalReports.aspx

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