PHARMACY SNOW SYMPOSIUM
DECEMBER 9-11, 2016

Round Table and Poster Guide

Skaggs School of Pharmacy and Pharmaceutical Sciences
UNIVERSITY OF COLORADO
ANSCHEUTZ MEDICAL CAMPUS
## Round Table Sessions

<table>
<thead>
<tr>
<th>Round Table Session</th>
<th>Saturday December 10th</th>
</tr>
</thead>
</table>
| **10:45 – 11:45 AM – Promoting your value interprofessionally** | 1. Lauren Biehle - Increasing interprofessional student engagement through innovative games: why should we play to learn?  
2. Allison M. Mann – Pharmacist involvement in interdisciplinary rounding as a means to promote the profession and enhance patient care  
3. Wanda T. Maldonado - Interprofessional Education at the University of Puerto Rico Medical Sciences Campus.  
4. Monica Miller – Interprofessional Teams Maximizing Resources |
| **3:15 – 4:15 PM – Education to improve practice** | 1. Emily K. Flores – Cultural Competency Exercises for Healthcare Learners  
2. Shaun E. Gleason - Planning and implementing global/international pharmacy education (G/I PE): Let established outcomes be your guide  
3. Kenneth W. Schafermeyer and Stephanie Lukas – Participating in the International Pharmacy Federation’s Pharmabridge Program  
4. Ruth Nemire – Can Technology Change Student Outcomes? |

<table>
<thead>
<tr>
<th>Round Table Session</th>
<th>Sunday December 11th</th>
</tr>
</thead>
</table>
| **3:00 – 4:00 PM – Expanding pharmacy practice to optimize patient wellness** | 1. Kim Cremers –The Pharmacist Role on Mission with MSF  
2. Gina Moore –Provider Status and Beyond: Expanding Roles for Pharmacists  
3. Ucheoma Nwizu and Kari Franson– Expanding Pharmacy Practice to Optimize Patient Wellness: The Lean Management Approach  
4. Chris Aquilante – Educational approaches to prepare pharmacists for precision medicine |
10:45 – 11:45 AM – Promoting your value interprofessionally

1. **Title:** Increasing interprofessional student engagement through innovative games: why should we play to learn?
   - Review the data for competition/games in the experiential learning setting
   - Discuss examples of games that have been used in the experiential education setting including incorporation into interprofessional education
   - Identifying the pearls and pitfalls of competitive games as active learning
   Facilitator: Lauren Biehle, PharmD, BCPS; Clinical Assistant Professor of Pharmacy Practice; University of Wyoming School of Pharmacy, Rose Family Medicine Residency

2. Pharmacist involvement in interdisciplinary rounding as a means to promote the profession and enhance patient care
   - An understanding of the differences between varying models of interdisciplinary rounding (ie: patient – centered/physician - centered, bedside/private, structured/loose).
   - Recognition of the various ways pharmacists can contribute to interdisciplinary rounding models to promote the profession and support patient care.
   - An appreciate for potential ways that pharmacy students and residents can play a role during interdisciplinary rounding.
   Facilitator: Allison M. Mann, PharmD, BCPS; Clinical Assistant Professor of Pharmacy Practice, University of Wyoming; Presbyterian / St. Luke’s Medical Center

3. Wanda T. Maldonado - Interprofessional Education at the University of Puerto Rico Medical Sciences Campus.
   - The schools that educate the future health professionals at the University of Puerto Rico Medical Sciences Campus have partnered to establish an interprofessional education program that aims to create a model for interprofessional practice which can in turn serve the needs of the patient population cared for by the University of Puerto Rico hospital and clinics.
   - The interprofessional education program transitions from the theoretical framework of the core competencies for interprofessional collaborative practice, to case scenarios and simulations, and experiential education activities that emphasize these competencies. Professional students and faculty from the schools of pharmacy, medicine, dental medicine and nursing, participate in the activities designed, respiratory therapists and social workers.
   - A description of the curricular sequence and educational activities available to students from the schools participating will be presented, as well as successful experiences and future plans to improve the program.
   Facilitator: Wanda T. Maldonado, B.S.Pharm., Pharm.D.; Professor and Dean School of Pharmacy; Medical Sciences Campus, University of Puerto Rico

4. Interprofessional Teams Maximizing Resources
   - TBD
   Facilitator: Monica Miller, Pharm.D., M.Sc.; Clinical Associate Professor; Purdue University, College of Pharmacy
3:15 – 4:15 PM – Education to improve practice

1. Cultural Competency Exercises for Healthcare Learners
   - Differentiate between Cultural Competency, Cross-Cultural Competency, Cultural Humility, and Cultural Appreciation as they apply to their area of practice or interest
   - Support the necessity of conducting cultural competency training in healthcare education
   - Describe at least 2 cultural competency exercises that they may utilize in their future education of healthcare learners
   
   Facilitator: Emily K. Flores, PharmD, BCPS; East Tennessee State University
   Associate Professor, Department of Pharmacy Practice; Gatton College of Pharmacy

2. Planning and implementing global/international pharmacy education (G/I PE): Let established outcomes be your guide
   - Discuss perspectives on the importance of G/I PE in pharmacy curricula worldwide;
   - Discuss key steps in planning for G/I PE with consideration for interprofessional education;
   - List pedagogical and assessment factors relevant to designing G/I PE;
   - Discover opportunities to align outcomes, competencies or goals for G/I PE worldwide, considering the US CAPE (Center for Advancing Pharmacy Education) 2013 Outcomes as an example.

   Facilitator: Shaun Ellen Gleason, PharmD, MGS; Director, Distance Degrees and Programs; Associate Professor; University of Colorado Skaggs School of Pharmacy

3. Participating in the International Pharmacy Federation's Pharmabridge Program
   - Describe the purpose of the Pharmabridge program and the benefits of U.S. schools of pharmacy hosting international faculty members.
   - Establish an itinerary in which experts at the home institution work with visiting international faculty members to achieve specific educational goals.
   - Develop a plan that successfully addresses logistical issues such as expenses, housing, insurance, professional activities, social activities, as well as achieving educational objectives and developing a follow-on plan.

   Facilitators: Kenneth W. Schafermeyer, Ph.D., Professor and Director Office of International Programs; St. Louis College of Pharmacy
   Stephanie Lukas, PharmD, MPH; Assistant Professor and Assistant Director Office of International Programs; St. Louis College of Pharmacy

4. Can Technology Change Student Outcomes?
   - Evaluate how technology enhances education
   - Compare technology tools available to enhance curriculum

   Facilitator: Ruth E. Nemire, Pharm.D., Ed.D.; Associate Executive Vice President; American Association of Colleges of Pharmacy (AACP)
3:00 – 4:00 PM – Expanding pharmacy practice to optimize patient wellness

1. The Pharmacist Role on Mission with MSF
   - Provide the participants examples of the various responsibilities of a pharmacist on mission with Doctors without Borders through my experiences
   - Discuss the challenges a pharmacist on a mission may face on mission and how these might be overcome
   - Outline how a pharmacist can prepare for a position with Doctors Without Borders
   Facilitator: Kimberly Cremers, PharmD; Director, Medical Science Liaisons CNS; TriNet Pharma

2. Gina Moore – Provider Status and Beyond: Expanding Roles for Pharmacists
   - State emerging opportunities for pharmacists to provide direct patient care.
   - List resources available to assist you in your practice setting advance pharmacist-provided patient care.
   Facilitator: Gina Moore, PharmD, MBA; Assistant Dean for Clinical and Professional Affairs; Associate Professor, Department of Clinical Pharmacy; University of Colorado Skaggs School of Pharmacy and Pharmaceutical Science

3. Ucheoma Nwizu and Kari Franson– Expanding Pharmacy Practice to Optimize Patient Wellness: The Lean Management Approach
   - To discuss the concept of lean management for process improvement
   - To review the tools required for lean thinking in process improvement
   - To list opportunities for utilizing lean thinking to improve and expand clinical pharmacy services
   Facilitators: Ucheoma Nwizu, PharmD; Clinical Pharmacist at Neighborhood Health Center; Portland, Oregon
   Kari L. Franson, PharmD, PhD; Associate Dean for Professional Education, Department of Clinical Pharmacy; University of Colorado Skaggs School of Pharmacy and Pharmaceutical Science

4. Chris Aquilante – Educational approaches to prepare pharmacists for precision medicine
   - Discuss pharmacist competencies and roles in pharmacogenomics (PGx) and precision medicine.
   - Compare and contrast different educational approaches used in PGx and precision medicine.
   - Identify opportunities for PGx educational partnerships and international collaborations in the field.
   Facilitator: Christina Aquilante, PharmD, FCCP; Associate Professor, Department of Pharmaceutical Sciences; University of Colorado Skaggs School of Pharmacy and Pharmaceutical Science
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Presenter(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>11:45 – 1:00 PM</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saturday</td>
<td>P1 - An Interprofessional Elective to Promote Global Healthcare</td>
<td>Emily K. Flores</td>
</tr>
<tr>
<td>December 10th</td>
<td>P2 - Pharmacist Involvement in an Accountable Care Unit (ACU) and Associated Patient Care Outcomes</td>
<td>Allison M. Mann</td>
</tr>
<tr>
<td></td>
<td>P3 - Integration of Behavioral Health and Clinical Pharmacy in an FQHC Setting</td>
<td>Benjamin Chavez, Emily Kosirog, Jonathan Muther</td>
</tr>
<tr>
<td></td>
<td>P4 - An Interprofessional Clinical Integrations Program</td>
<td>Megan Thompson, Eric Gilliam, Wesley Nuffer</td>
</tr>
<tr>
<td></td>
<td>P5 - Overcoming Barriers to Interprofessional Practice &amp; Education through Legislative Reform: A Colorado Case Study</td>
<td>Kari Franson, Eric Gilliam</td>
</tr>
<tr>
<td><strong>5:45 – 7:00 PM</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saturday</td>
<td>P6 - Current Practices in Hosting Non-US Pharmacy Students at US Colleges/Schools of Pharmacy in Experiential Rotations</td>
<td>Emily K. Flores, Shaun Gleason, Naser Alsharif</td>
</tr>
<tr>
<td>December 10th</td>
<td>P7 - Train-the-Trainer Program for Faculty Teaching a Patient-Centered Communication Course in Turkey</td>
<td>Jodie Malhotra, Neşe Aksu, Akgul Yesilada, Deniz Baykal, Kari L. Franson</td>
</tr>
<tr>
<td></td>
<td>P8 - Eliminating Pharmacy Borders through an International Interprofessional APPE Rotation Site in Rural Guatemala</td>
<td>Sarah Scoular, Jodie Malhotra, Connie Valdez</td>
</tr>
<tr>
<td></td>
<td>P9 - Evaluating international rotation participation and impact on graduate career path</td>
<td>Meghan Lynch, Ngoc Thanh, Daniel Galipeau, Whitley Yi, Kari Franson</td>
</tr>
<tr>
<td></td>
<td>P10 - Managing Risk in Study Abroad and International Service Programs</td>
<td>Kenneth W. Schafermeyer, Stephanie Lukas</td>
</tr>
<tr>
<td></td>
<td>P11 - Translate Theory into Practice Model Program</td>
<td>Sherif Kamal</td>
</tr>
<tr>
<td></td>
<td>P12 - Teaching Global Health to pharmacy students with a focus on pharmacist role</td>
<td>Meghan Jeffres, Jodie Malhotra</td>
</tr>
<tr>
<td></td>
<td>P13 - Online continuous education sources to develop pharmacists' knowledge and skills: an integrative review</td>
<td>Sara Fouad Mahmoud</td>
</tr>
<tr>
<td></td>
<td>P14 - A Cross Sectional Assessment of Preceptor Development Needs</td>
<td>Sara Fouad Mahmoud</td>
</tr>
<tr>
<td><strong>11:45 – 1:00 PM</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sunday</td>
<td>P15 - The Pharmacist Role on Mission with Doctors without Borders</td>
<td>Kim Cremers</td>
</tr>
<tr>
<td>December 11th</td>
<td>P16 - Promoting Rational Use of Medications for Pregnant women and Children in Rural Bangladesh</td>
<td>Kenneth W. Schafermeyer</td>
</tr>
<tr>
<td></td>
<td>P17 - Sustainable funding for clinical pharmacy services through collaboration with Medicaid accountable care organizations</td>
<td>Emily Kosirog, Benjamin Chavez, Todd Lessley, Joe VandeGriend, Jeff Freund, Joseph Saseen, Gina Moore</td>
</tr>
<tr>
<td></td>
<td>P18 - Medication adherence in Medicaid recipients at a community health center</td>
<td>Alvin B. Oung, Emily Kosirog, Benjamin Chavez</td>
</tr>
<tr>
<td></td>
<td>P19 - Creating a Culture of Safety: Medication Adverse Event Tracking at a Pediatric Oncology Hospital in Guatemala</td>
<td>Jessica White, Julie Gegg, Liliana Zelaya, Emily Dray</td>
</tr>
<tr>
<td></td>
<td>P20 - A Lean Management Approach to Improving Medication Reconciliation</td>
<td>Ucheoma Nwizu</td>
</tr>
<tr>
<td></td>
<td>P21 - Antimicrobial stewardship program</td>
<td>Sherif Kamal</td>
</tr>
</tbody>
</table>
**Poster Abstracts**

P1

**Title:** An Interprofessional Elective to Promote Global Healthcare

**Authors:** Emily K. Flores, PharmD, BCPS

**Abstract:**

**Background:** East Tennessee State University (ETSU) boasts a comprehensive Academic Health Sciences Center (AHSC) with a strong emphasis on interprofessional education and a growing interest in international and global healthcare. Only small a percentage of students will study abroad due to a variety of reasons, demonstrating a need for students to have interprofessional, international opportunities without requiring travel. *Global Healthcare: Perspectives & Practice* is a blended format, interprofessional course designed to introduce health professional students to global concepts without requiring a passport.

**Objective:** Design, implement, and assess an entry-level interprofessional course in global healthcare.

**Methods:** Course outcomes and interprofessional competencies were identified, activities and assessments were planned to guide students to achieving these outcomes and competencies, and then the course was approved within the graduate programs of the AHSC. In the course, students actively engage in gaining a global perspective through online modules, mini cultural experiences, technology, discussion, self-reflection, and small and large group exercises. The course culminates in an interprofessional group project on a global health issue and a self-reflection on progress toward becoming a global citizen.

**Results:** The course enrolled pharmacy, medicine, and public health students in its first offering and was very well received. Students gained an appreciation of other healthcare systems and other cultures, serving as a foundational preparation step for practicing cross-cultural competency as a healthcare professional. Students performed well on their final projects and reflections.

**Implications:** The course will continue to be offered with the goal of increasing enrollment and is being considered as a foundational course in an AHSC Global Health Certificate program that is in development.
Title: Pharmacist Involvement in Accountable Care Units (ACU) at a Community Hospital

Authors: Allison M. Mann, Pharm.D., BCPS
University of Wyoming School of Pharmacy

Abstract:
Background / Purpose:
Healthcare has become a machine that is increasingly complex, with multiple uncoordinated pieces and players often contributing to a system that makes communication difficult and care that is inefficient or unsafe for patients. A community hospital attempted to coordinate and target patient care through the creation of Accountable Care Units (ACU) that focus on an interdisciplinary and geographic approach to patient care.

Methods:
The Accountable Care Unit (ACU) model was designed and implemented in 2013 at Presbyterian / St. Luke’s Medical Center (PSLMC) on two internal medicine units. The intent of the ACU is to be a geographic care area responsible and accountable for the clinical, service, and cost outcomes it produces. The four main features of an ACU include: unit based (geographic) teams, patient centered workflow, unit level performance data, and unit management partners. The ACU model emphasizes interdisciplinary care, with direct participation in daily patient – centered rounding with physicians, pharmacists, nurses, case management/social workers, and rehab services personnel. These daily rounds, termed Structured-Interdisciplinary-Bedside-Rounds (SIBR), aim to enhance communication between the various team members, while including the patient in their own healthcare scenario to ultimately improve the quality and safety of patient care. By tracking unit-based data, rather than traditional institutional numbers, the ACU can identify areas of strengths and weaknesses and thereby create improvement plans within the shared leadership model between physicians and nursing staff. The ACU model utilizes a clinical pharmacist as a core member of the team participating in SIBR rounds, as well as weekly unit – based feedback sessions.

Results:
Through involvement in the ACU, the participating pharmacists find enhanced communication with providers and other care team members, and are able to more easily make order clarifications, recommendations, and interventions. Pharmacy students on rotation at the hospital have also been able to find a niche in the ACU model, by providing vital support to the team related to transitions of care and patient counseling. Preliminary data since their inception have shown a trend towards decreased mortality, length of stay, and 30 day readmissions on the ACUs compared to control units. Additionally, unit – level scores on the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey have shown improvements in certain areas, indicating a potential impact on patient satisfaction and patient perception on their care.
Conclusions:
The Accountable Care Unit and Structured Interdisciplinary Bedside Rounding models have proven to be valuable structures for enhancing communications between healthcare disciplines at PSLMC. These models have fostered a culture of patient – centered care, which has led to notable benefits in terms of quality and patient satisfaction outcomes. Pharmacist involvement in this model allows for increased engagement with the healthcare team, enhanced opportunities for communication with providers as well as patients, and increased opportunities to include pharmacy students in interdisciplinary care.
Title: Integration of Behavioral Health and Clinical Pharmacy in an FQHC Setting

Authors: Benjamin Chavez, PharmD\textsuperscript{1,2}, Emily Kosirog, PharmD\textsuperscript{1,2}, Jonathan Muther, PhD\textsuperscript{2}  
\textsuperscript{1}University of Colorado Skaggs School of Pharmacy, Aurora, Colorado. \textsuperscript{2}Salud Family Health Centers, Ft. Lupton, CO

Abstract:

Purpose: To describe an innovative service aimed at improving access to care for patients seeking behavioral health treatment in a primary care FQHC setting. This service involves the integration of behavioral health providers and clinical pharmacists into the treatment team.

Steps for Implementation: Behavioral health was integrated into the clinic and engaged in screening patients during primary care visits and providing consultation and brief therapy. A board certified psychiatric pharmacist developed a collaborative practice agreement allowing pharmacists to initiate, change, or discontinue medications for depression, anxiety, and bipolar disorder while following these patients long-term. Additionally, they may consult on other mental health diagnoses as needed. The protocol indicated that any person referred for medication management by pharmacy had to have a referral for behavioral health counseling. As part of comprehensive primary care, pharmacists also manage diabetes and hypertension per an existing protocol.

Benchmarks for Monitoring Results: Patients who have appointments with both behavioral health and clinical pharmacy will be compared with patients who only had appointment with one of the above. Outcomes measured will include number of patients seen, no-show rate, the behavioral outcome measure Outcome Rating Scale (ORS), as well as metrics of physical health, such as improvements in HbA1C and blood pressure. Provider satisfaction with this service will also be routinely assessed.

Conclusions on Replicating this in Other Health Centers: This service is reproducible in other health centers by ensuring that behavioral health providers and clinical pharmacists with behavioral health experience are hired to help with implementation. Their training and expertise makes them ideal to help manage behavioral health issues in the primary care setting. This addresses the gap in availability of psychiatrists by reducing the need to refer to outside specialty clinics. This integration also helps broaden therapeutic options for patients to include behavioral therapy and medication management by experts. This model will drive improvements in the service delivery model for primary care and inform policy and payment reform.
Title: An Interprofessional Clinical Integrations Program

Authors: Megan Thompson, Eric Gilliam, Wesley Nuffer

Abstract:

TBD
Title: Overcoming Barriers to Interprofessional Practice & Education through Legislative Reform: A Colorado Case Study

Authors: Kari L Franson PharmD, PhD, Eric H Gilliam PharmD
University of Colorado Anschutz Medical Campus Skaggs School of Pharmacy

Abstract:

Purpose: Allow pharmacy students to participate fully in patient care activities when led by any member of the interprofessional health care team.

Background: In the United States, pharmacy is the only health profession requiring student licensure (intern). Colorado statute required a licensed pharmacist to supervise interns while engaging in the practice of pharmacy, thus necessitating one to be present for each Interprofessional (IP) clinical experience.

Description of Intervention: Between 2010-2012 we identified stakeholders and engaged potential collaborators (other pharmacy and health professions schools, state board of pharmacy, Colorado Pharmacists Society, practitioners, and the public) to establish the need to change the law to expand quality IP opportunities for pharmacy students. We changed the law in 2012 and rules were drawn in 2013. We began to offer IP 4th year rotations in 2014 and pharmacy students reported their daily tasks during weeks 2 & 5 of their rotations.

Results: The law allowed 12 health professions with overlap in scope of practice to supervise pharmacy students engaged in the practice of pharmacy. New advanced clinical training experiences were developed by primary care physicians (10-15/year), and more clinical pharmacy experiences were created at safety net clinics (40/year) and retail-community health centers (35/year). Three primary care clinics also integrated early pharmacy learners into their clinics (80/year). Students at the primary care sites reported an average of 10.55 direct patient encounters (seeing patients, follow-up communications) per day; up to 28.1 indirect patient encounters (reviewing patient charts) and 3.5 non-patient care activities (time engaged with preceptor).

Conclusion: Changing law allowed more pharmacy students to contribute to IP patient care practices.

Relevance: Addressing legal barriers to IP clinical education legislatively is possible and may be necessary to support health professions students in their requirements to learn in new team-based care delivery models.
**Title:** Current Practices in Hosting Non-Us Pharmacy Students at US Colleges/Schools of Pharmacy in Experiential Rotations

**Authors:** Emily K. Flores, PharmD, BCPS, Shaun Gleason, PharmD, MGS, and Naser Alsharif, PharmD, MS, PhD

**Abstract:**

Collaborators for the paper titled “Current Practices in Hosting Non-Us Pharmacy Students at US Colleges/Schools of Pharmacy in Experiential Rotations” were identified through the American Association of Colleges of Pharmacy (AACP) Global Pharmacy Education Special Interest Group (GPE-SIG). Collaborators summarized literature review, conducted a survey, and contributed from their collective experience to formulate the paper. The paper and presentation address in more detail than previously available the key aspects related to logistical and educational needs for hosting non-US pharmacy students for both the home and host institutions.

The paper builds on two previously published papers that discussed current practices in Global/International Advanced Pharmacy Practice Experiences (G/I APPEs) that emphasized logistical and educational considerations in sending US pharmacy students on G/I APPEs. During the minisession, the collaborators hope to encourage the formation of and expansion of bi-lateral exchange partnerships in experiential training by providing those in attendance with an overview of current practices.

**Outcomes:** The paper that focuses on collaboration which serves as an outline for the session is divided into three main sections: Home (International) Institution Requirements, Host (US-based) Institution Requirements, and Objectives/Learning Outcomes/Performance Activities. Besides mentioning highlights and common themes from the paper’s sections, the presenters will discuss special considerations that commonly apply, goals beyond the exchange, and results from a survey conducted of current practices.

**Future plans:** Publication of this third paper in the series of papers related to best practices in G/I APPEs is hoped to provide a roadmap for interested faculty and administrators to grow G/I APPEs in collaboration with international and US-based institutions to have bi-lateral exchange.
Train-the-Trainer Program for Faculty Teaching a Patient-Centered Communication Course in Turkey.

Authors: Jodie V. Malhotra1, Neşe B. Aksu2, Akgül Yesilada2, Deniz E. Baykal3, Kari L. Franson1

1University of Colorado Skaggs School of Pharmacy and Pharmaceutical Sciences, Department of Clinical Pharmacy, Colorado, USA
2Istanbul Kemerburgaz University, School of Pharmacy, Department of Basic Pharmaceutical Sciences, Istanbul, Turkey
3Istanbul Kemerburgaz University School of Foreign Languages

Abstract:

Program: Istanbul Kemerburgaz University (IKBU) opened in 2012. The IKBU curriculum includes six English courses. The last course in this series, Oral Communication in Health Sciences Practice, was developed in collaboration with the University of Colorado (CU) to focus on patient-centered health care communication skills. This was a 15 week course. The first 10 weeks was taught by faculty members from the School of Foreign Languages at IKBU and the last 5 weeks was taught by CU and IKBU School of Pharmacy faculty members. CU faculty developed the course content, structure, learning methods, and assessments that were used throughout the course. CU faculty members conducted a train-the-trainer program for IKBU faculty from the Schools of Foreign Languages and Pharmacy via video conferences. The train-the-trainer program consisted of four video-conferenced training sessions. The first two sessions focused on covering didactic course content in detail. Major course activities are mock patient encounters assessed using standardized, validated grading rubrics used in the CU PharmD programs. To ensure international reliability, the last two training sessions were used to lead IKBU faculty through a standard rubric norming process.

Justification/documentation: The Turkish pharmacy community has made a call for re-professionalization of pharmacists to be more patient-centered. A critical step in addressing this call is for the current drug-centered pharmacy education in Turkey to be transformed into a patient-centered education system. The train-the-trainer program developed by CU provided the necessary training to IKBU faculty to enable them to independently deliver the Oral Communication in Health Sciences Practice course.

Adaptability: The Patient-Centered Communication train-the-trainer program could be adapted to meet the needs of pharmacy curriculum in any country.

Significance: This progressive international train-the-trainer program was designed to provide IKBU faculty with the knowledge, skills and abilities necessary to train students in their curriculum to be patient-centered pharmacists.
Title: Eliminating Pharmacy Borders through an International Interprofessional APPE Rotation Site in Rural Guatemala.

Authors: Scoular, Sarah, PharmD, BCPS; Malhotra, Jodie, PharmD; Valdez, Connie, PharmD, BCPS, MSEd

Abstract:

Objective: To develop and implement an interprofessional APPE rotation site in rural Guatemala

Methods: The World Health Organization’s Interprofessional Practice Framework addresses the global shortage of healthcare workers by embracing interprofessional patient care models. Through a unique public-private partnership between the Guatemala Bolaños Foundation and the University of Colorado (including Center for Global Health, Children’s Hospital Colorado, and CU professional programs) a low-cost interprofessional healthcare center was developed. Pharmacy school faculty and administrators visited the healthcare center to identify clinic needs and potential APPE rotation opportunities which would model clinical pharmacy for Guatemalans. The APPE rotation was developed by pharmacy faculty, and included pharmacy distribution activities, patient/technician/provider/community education, and clinical pharmacy services. Students on rotation were expected to be self-directed and independent. Pharmacy faculty served as primary preceptors in collaboration with a local Guatemalan pharmacist, medical residents, and the clinic directors. Each pharmacy faculty preceptor travelled to Guatemala with their student and provided clinic orientation and rotation expectations during week one. Pharmacy faculty were available remotely (weeks 2-6), via WhatsApp or Facetime, to answer pharmacy related questions and assist with clinical pharmacy visits.

Results: For the 2015-2016 academic year, 3 APPE pharmacy students completed the Guatemala rotation, where they collaboratively educated members of the community, performed needs assessments, and solidified pharmacy’s role in an innovative healthcare model which can be implemented around the world.

Implications: The University of Colorado Skaggs School of Pharmacy’s APPE rotation in Guatemala meets the needs of underserved populations and provides international interprofessional opportunities for fourth year pharmacy students.
Title: Evaluating international rotation participation and impact on graduate career path

Authors: Meghan Lynch, Ngoc Thanh, Daniel Galipeau, Whitley Yi, Faculty Mentor: Dr. Kari Franson

Abstract:

Introduction: The field of pharmacy has grown globally, and it is important for pharmacy educational programs to offer students opportunities to expand their international experiences. While many pharmacy education programs have begun offering international experiences, it is still uncertain what long-term benefits or effects these experiences have on pharmacy students’ future careers, including location of practice and practice population.

Research Question: The purpose of this study is to evaluate whether participation in international APPE rotations influences pharmacists’ career path upon graduating.

Study Design: Cross-sectional survey

Methods: All pharmacy students who indicated interest in completing an international rotation from the 2011-2016 graduating classes at the University of Colorado will be contacted via email with a voluntary, anonymous survey. The survey will investigate work site demographics, current international work involvement, and expressed desire to play a role in international work. Descriptive statistics and Student’s t test will be used to analyze the career path differences between cohorts and examine the factors for choosing to complete or not to complete an international rotation.

Results: It is anticipated that this data will provide a better understanding of the potential impact completing an international rotation has on graduate career path. This study aims to add insight into the value that offering international opportunities provides for students and the global community.

Conclusion: With the compilation of data from students who completed successful international APPE rotations and those who indicated initial interest without completion, we will analyze the effect of these choices on their current career path and hopes for the future. It is desired that the results will lead to more tangible evidence of the benefits of international rotation opportunities on the growth and expansion of healthcare provided by students across income brackets and physical locations.
Managing Risk in Study Abroad and International Service Programs

Kenneth W. Schafermeyer, Ph.D., Stephanie Lukas, PharmD, MPH

Abstract:

International travel by faculty members and students involves some unique risks to health and personal safety that must be carefully managed. An international travel policy can establish a consistent set of travel standards to be followed by all units of the College. The intent is to provide guidance and oversight of international travel with a view toward managing risk and promoting sustainable educational experiences. Risk management activities take the form of risk avoidance, risk minimization, risk mitigation and risk sharing and includes, but is not limited to the following:

- Approval of travel sites
- US. State Department Travel Advice
- CDC health precautions
- Waiver of liability
- Export control
- Medical release
- College rules for international travel
- Communications while on site
- Emergency contacts
- Emergency preparedness plans
- International health insurance
Translate theory into Practice program: A Program for Change

Sherif Kamal

Abstract:

Background
A journey of more than 14 years in the field of Hospital Pharmacy made us more confident that the more you prepare pharmacists to play their vital role in the hospital clinical setting the more you are saving lives. This belief offered us a relieve of our daily dream, a vision of all Egyptians getting healthcare they deserve, which will never be reached without pharmacists playing their role.
In Egypt the gap between Academia and practice is huge. The academic staff now in more than 42 faculties of Pharmacies graduating 10 000 pharmacists annually without any structured clinical training. The academic staff will teach from books, with no expertise themselves about the real world scenarios in clinical settings. Both unprepared and even with wrong perception about their clinical role there is a great need for pharmacist to bridge gap between theory and practice.

Purpose
To describe the change management model used by 57357 group to bridge the gap between Academia and practice.
To identify future improvement that need to be implemented to cover the needs of the pharmacy graduate.

Method
Translating Theory into Practice TM is since 2007 our slogan and way of life, the methodology of teaching, that gives life to pharmacy practice and convert clinical pharmacy into pharmaceutical services. Training 15 students per week, more than 25 international students and more than 60 graduate pharmacists per year. Teaching practical oncology for Final year pharmacy students in two pharmacy schools in Egypt was the first step toward building academic platform with Egyptian Universities. Running workshops all over Egypt to educate and inspire pharmacists about their role in clinical setting, working with Egyptian MOH Oncology centers and NCI Sudan to train the oncology pharmacists and finally preparing now to start to train people on specialties like Bone marrow transplantation, Critical Care, Pain Management, Cardiology, Pulmonary and Respiratory services, Neurology, Endocrinology and other specialties that are provided for our patient.
This curriculum is intended to meet the educational needs of the clinical pharmacists and provide a framework for establishing an on-going continuing education program to meet the identified educational needs and to help them to improve their hospital practice with the ultimate goal of Good Hospital Pharmacy Practice and increased quality of both the life of the patient and the quality of health care services provided.
This training in oncology pharmacy practice is an organized, directed, postgraduate/undergraduate training program, which focuses on the development of the knowledge, attitudes, and skills required to provide pharmaceutical care to patients.

Program goals:
1. To introduce the concept of the clinical pharmacy and Pharmaceutical care, theoretical and practical experience in practice of clinical pharmacy.
2. Training the pharmacists to meet the standard qualification and to enable them as clinical pharmacy staff to fulfill their job description.
3. To make the pharmacy aware and familiar with Clinical Pharmacy policies, procedures and guidelines.

A feedback evaluation questionnaire was used to determine the areas for improvement

Conclusion
In the new age of clinical pharmacy our department is now the Mecca of clinical pharmacy training in Egypt. We are planning to prepare our educational and training material to comply with the accreditation requirements and aiming to establish the first pharmacy residency program in Egypt.
This entire paradigm shift is the 57357 Model, not only a national project or the Egyptian 4th pyramid but also a change agent that transformed people and invested human capital. The 57357 Model needs to survive and to do so 57357 need your spirit of serving the patients and the spirit of serving students and researchers.
Title: Teaching Global Health to pharmacy students with a focus on pharmacist role

Authors: Meghan Jeffres, Jodie Malhotra

Abstract:

Introduction
Global health coursework and experiences is an emerging area of pharmacy school curriculum. Data from a 2014 survey reported that 47% of participating pharmacy schools offered globally focused classroom material. The majority of these classes were interprofessional and organized by non-pharmacy disciplines. There is limited data describing global health curriculum designed specifically for pharmacy students.

Objective: To create and deliver a global health elective with a focus on the pharmacist role.

Methods
Two faculty specializing in international affairs, mental health, and infectious diseases collaborated in the creation of the Global Health Disparities course. Course directors gathered global health course curricula and syllabi from pharmacy, medical, and public health schools as well as published literature about global health education in an effort to identify curricular content themes.

Results
The University of Colorado Skaggs School of Pharmacy offered the Global Health Disparities elective in the Fall of 2016 to second and third year pharmacy students. The 16 week course met once weekly for 2 hours. Each lecture day consisted of didactic content, an active learning exercise, and a homework assignment. Didactic content included global pharmacy education, role of the global health pharmacist, funding and grant writing, noncommunicable diseases, HIV and AIDS, tuberculosis and leprosy, malaria, viral epidemics, diarrhea, and travel medicine. The focus of disease state lectures was medication access, affordability, adherence, and patient education rather than the therapeutics of the disease. Some of the active learning exercises and homework assignments associated with didactic content included assessing pharmacy education curriculums in another country, writing a cover letter for a pharmacy job in global health, stocking a pharmacy on a budget for a specific region, creation of public health campaign content, and writing an additional role of a pharmacist to the cast of the movie Contagion. A longitudinal group project consisted of students identifying a problem associated with medication access, affordability, adherence, or patient education, writing a grant to fund a solution, and presenting their solution to peers in a competition for funding.

Conclusion
There is an urgent need for pharmacists capable of identifying and overcoming barriers to medication in resource poor areas of the world, both locally and globally. This course allows pharmacy students to develop critical thinking and problem-solving skills while gaining global health knowledge.
Title: Online continuous education sources to develop pharmacists' knowledge and skills: an integrative review

Authors: Sara Mahmoud

Abstract:

Purpose
Continuous education (CE) in the health care system has a great impact on advancing pharmacy professional practice. Unfortunately, the search for proper and valid CE programs to meet educational objectives can be challenging and will be time consuming. The purpose of this study was to identify, evaluate and provide a list of valid and reliable web-based sources for Internet-based continuous education (IBCE) programs to assist and motivate pharmacists worldwide in improving their skill endeavors.

Methods
A multilevel search strategy was conducted to identify websites for major academic and professional organization through a web search using different general search engine (Google, yahoo) and literature search engine (OVID-MEDLINE, PubMed). Additionally, a standardized template email was developed by the research team and sent to experts in different health care-related academic institutions and organizations around the globe to recommend a list of the best IBCE according to their knowledge. Five pharmacists evaluated all websites independently. The validated programs were categorized by sources/type and a descriptive analysis of data was performed.

Results
During the study period 79 websites were collected and categorized by source into specialised areas (n = 14), professional organizations (n = 17), universities (n = 23), and educational networks (n = 25). The presented tables of data included CE program names, website address, country of providing CE programs, mode of study (Online vs. Online -Live mixed), and affordability (Free vs. Paid). Furthermore, around 17 sources provided certified programs and more than 26 certified programs were identified. These certified programs targeted multiple therapeutic areas such as medication management services, diabetes, anticoagulation, critical care, hospital pharmacy, education and many others.

Conclusion
This study provides a concise list of reliable CE programs source in different therapeutic areas and this will help pharmacists in advancing their skills and knowledge.
Title: Needs assessment for preceptors’ professional development – a cross-sectional study

Authors: Sara Mahmoud\textsuperscript{1,2}, BPharm, PharmD, BCCCP, RPh; Jodie Malhotra\textsuperscript{2}, PharmD; Moza Al Hail, BPharm; Wessam El Kassem, PharmD, MScPharm, MBA; Rasha Al Anany\textsuperscript{1}, PharmD; Moza Al Hail\textsuperscript{1}, BPharm, (Mgt.Dip)
\textsuperscript{1} Hamad Medical Corporation
\textsuperscript{2} Skaggs School of Pharmacy, University of Colorado

Abstract:

Introduction:
To ensure excellence for experiential educational programs, it is important to invest in preceptors’ professional development. A literature search was conducted and several universities were contacted about the methodology for preceptor development and no structured program was found. It was also reported by the ASHP that there is no adequate preceptor development programs in residency programs. At Hamad, Medical Corporation (HMC), there is a planned project for preceptors’ professional development to enhance the quality of PGY1 residency program. The program started in 2015 and is in candidate status for ASHP accreditation. The first step towards such project is to conduct a comprehensive needs assessment. The aim of this cross-sectional study is to primarily assess the preceptors needs at HMC.

Methods:
The PGY1 residency program at HMC started in 2015. In the beginning, all preceptors attended an orientation lecture presented by Dr. Rasha Al Anany, program director, which discussed program description, application process and eligibility requirements. Later, all preceptors attended the Residency Program Design and Conduct conducted by the ASHP representatives. By the end of the program in 2016, the ASHP guide was revised and a literature search was conducted to build a comprehensive preceptor assessment rubric for preceptor assessment. The items on the preceptor assessment was formulated into a self-assessment questionnaire which was sent to all PGY1 preceptors for the year 2015-2016. The survey included rating questions in various competency areas such as: being role model pharmacist, teaching skills, communication skills, professional skills, research and education. Preceptors were also asked to list three areas for development and if they have completed CEs related to education.

Results:
The survey included 16 questions for self-assessment and was sent to 18 preceptors. Response rate was 94% (n=17). Results of the survey showed that preceptors rate themselves on average 4.29/5 as pharmacy role models. Preceptors are satisfied with their certification and credential credits. Most preceptors demonstrate leadership in their position and have rated themselves as proactive and innovative. On average, preceptors have rated themselves well in being able to motivate students (4.5/5). Most preceptors (95%) rated themselves
highly in actively participating in research and being able to foster the interest of research in residents. On the other hand, preceptors reported that they require training in using the advanced teaching skills such as coaching and facilitating. Some preceptors (6%) reported deficiency in being able to transition between different teaching skills and tailoring teaching strategies based on different educational needs. Other preceptors reported deficiency in writing constructive feedback. At the time of survey, fifty percent of the preceptors completed 5 CPEs related to education.

Preceptors were also asked to list three skills that required improvement. The top listed skills were: teaching skills, presentation skills and management skills. Other individual skills were noted for each preceptor. Some of these are: critical conversation, critical thinking, and management of phase II and III clinical trials.

**Conclusion:**
On a global level, there needs to be a comprehensive development program for preceptors. At HMC, the program needs to emphasize on utilizing different teaching skills, designing tailored teaching strategy, presentation skills and writing feedback. In addition, preceptors may require re-defining of management skills.

**Current plan:**
All preceptors were required to register for the Indiana Pharmacy Teaching certificate (IPTeC). Individual meetings were held between each preceptor and residency director to discuss their evaluation and plan for development. Soon, a focus group will be formed with preceptors to discuss and elaborate on the results of the survey. Currently, there is a plan to design an interactive training program in collaboration with the University of Colorado.
Title: The Pharmacist Role on Mission with Doctors without Borders

Authors: Kimberly Cremers, PharmD

Abstract:

Médecins Sans Frontières (MSF) / Doctors Without Borders is an international, independent, medical humanitarian organization that delivers emergency aid to people affected by armed conflict, epidemics, natural disasters and exclusion from healthcare. MSF offers assistance to people based on need, irrespective of race, religion, gender or political affiliation. Pharmacists play a critical role in Missions with a significant medications and/or medical supplies. While responsibilities vary by the scope of the Mission and the division of responsibilities with the Ministry of Health for the country, pharmacists define, implement, coordinate and supervise all pharmacy related activities in the Mission. Pharmacists, working with the medical leadership in the Mission, must comply with the national and international laws and regulations and ensure the quality and proper organization of medical supply process, procedures and protocols, the proper management of the medical stock in the projects and the correct use of medicines and medical material. Not only must a pharmacist consider current challenges, a major responsibility is to anticipate and plan for the future needs of the mission as they place an international order into one of the main supply warehouses.

During my five missions with MSF my role and responsibilities as a pharmacist varied. I will outline the major accountability of my role in each mission as well as the challenges I faced and how I worked to overcome these challenges to meet the needs of the mission. What does it take to be a pharmacist with MSF? What are the various roles for a pharmacist within the organization? What are the challenges faced by a pharmacist with MSF? What characteristics does MSF look for in a pharmacist? How many pharmacists are in the field for MSF?
Promoting Rational Use of Medications for Pregnant women and Children in Rural Bangladesh

Kenneth W. Schafermeyer, Ph.D.,

Overview. Rural Bangladeshis rely on drug sellers who lack formal pharmaceutical training. Services provided by these practitioners may have harmful consequences due to inappropriate prescribing. A St. Louis College of Pharmacy faculty member and two students worked with a physician from the school of Medicine at Washington University in St. Louis under the sponsorship of a non-government organization (NGO) known as Friends in Village Development – Bangladesh (FIVDB). Together, we developed a pilot program to educate villagers and drug sellers in Sylhet about pharmaceutical safety for vulnerable citizens (i.e., pregnant women and children aged five years and under). We conducted qualitative interviews of villagers, drug sellers, and NGO workers to determine patterns of inappropriate use of medications and cases in which drugs caused harm as formative work for a pilot medication education program.

Outcomes. Based on our results, we created educational flyers about pharmaceutical safety and produced a skit to be performed at community centers for both drug sellers and villagers.

Future Plans. Educational materials will be distributed in the pilot areas and pre- and post-test knowledge assessments will be conducted. If successful, additional materials will be created to address broader pharmaceutical safety and could be adopted in other NGO work regions.
Title: Sustainable funding for clinical pharmacy services through collaboration with Medicaid accountable care organizations

Authors: Emily Kosirog, PharmD1; Benjamin Chavez, PharmD1; Todd Lessley, MPH, RN, BSN,2; Joe VandeGriend, PharmD1; Jeff Freund, PharmD; Joseph Saseen, PharmD1; Gina Moore, PharmD, MBA1

1University of Colorado Skaggs School of Pharmacy, Aurora, Colorado. 2Salud Family Health Centers, Ft. Lupton, CO

Abstract:

Purpose: Funding clinical pharmacy services in Community Health Centers (CHCs) is challenging. Changing Medicaid reimbursement models, including the regional accountable care organizations in Colorado, may facilitate financial support for these services. We describe the development of a sustainable, value‐based clinical pharmacy service through demonstration of improved patient outcomes.

Steps for Implementation: A two-year program grant established clinical pharmacy services at two clinics of Salud Family Health Centers, a CHC serving English and Spanish speaking patients. Two clinical pharmacists developed medication management services, including collaborative practice agreements, to target patients with uncontrolled diabetes and hypertension, and tracked the outcomes. With support from Salud’s Accountable Care Manager, Executive Vice President, and the University Of Colorado Skaggs School Of Pharmacy, outcome measures were presented to Colorado Access, a Regional Care Collaborative Organization (RCCO) under Colorado Medicaid. Significant improvement in disease management metrics was demonstrated, resulting in continued clinical pharmacy service funding by Colorado Access.

Benchmarks for Monitoring Results: Clinical metrics presented to Colorado Access demonstrated significant reductions one year improvements in Hemoglobin A1c≥9% (56% baseline, 31% at 1 year, n=121), blood pressure <140/90 (35% baseline, 60% at 1 year, n=203), LDL-C<100mg/dL (45% baseline, 72% at 1 year, n=75), and high provider satisfaction. The clinical pharmacy program continues to measure success via the Quadruple Aim: patient satisfaction, provider satisfaction, decreased costs, and improved clinical outcomes. Quarterly clinical pharmacy data reports containing clinical measures and non-direct-patient-care activities are shared with the payer to ensure continued funding.

Conclusions on replicating this in Other Health Centers: Partnership with payers is key to funding clinical pharmacy services that cannot be billed for in traditional fee-for-service models. As healthcare reimbursement moves to pay-for-performance, strategic partnerships with payers and clinical pharmacists can help clinics improve the Quadruple Aim. Pharmacists incorporated in the clinical setting are well positioned to help with chronic disease management and improve provider and patient satisfaction. Community Health Centers should work in partnership with Accountable Care Organizations or their state Medicaid organization to fund clinical pharmacy services.
Title: Medication adherence in Medicaid recipients at a community health center

Authors: Alvin B. Oung, PharmD1,2; Emily Kosirog, PharmD1; Benjamin Chavez, PharmD1
1University of Colorado Skaggs School of Pharmacy, Aurora, Colorado
2University of Wyoming School of Pharmacy, Laramie, Wyoming
At the time this project was conducted, Dr. Oung was a PGY2 Ambulatory Care Pharmacy Resident at the University of Colorado

Abstract:
Research Objectives
The primary objective of this study was to determine baseline medication adherence for medications used in hypertension, hyperlipidemia, and diabetes among Medicaid recipients in a federally qualified health center. Secondary objectives were to describe the association between adherence and patient factors such as age, gender, clinic, race, and language.

Study Design/Methods
This was an IRB-approved, retrospective, descriptive study, which used prescription fill data provided by Colorado Access, a Colorado Medicaid Accountable Care Organization. Demographics, including language preference, age, and race, were also collected. Medication adherence was evaluated from January 1, 2015 – October 1, 2015. Medication possession ratios (MPR) and proportion of days covered (PDC) were calculated for each individual medication. Both MPR and PDC are commonly used to evaluate medication adherence in literature. Values ≥ 0.80 were classified as adherent. Chi-square tests and odds ratios were calculated to test for differences in adherence among groups.

Principal Findings and Quantitative/Qualitative Results
Among 1,788 medications (derived from 1,034 individual patients), medication adherence was found to be highest among recipients taking medications for hypertension (67% adherent via MPR, 57% adherent via PDC), followed by hyperlipidemia (67% via MPR, 52% via PDC), and lastly diabetes (58% via MPR, 45% via PDC). Patients taking medications for diabetes (i.e. metformin) were seen to be less adherent using both MPR and PDC adherence measures, p<0.01. Men, individuals 18-29 years old, African Americans, and individuals with English documented as their preferred language, were associated with lower adherence rates than their respective comparators.

Conclusions/Impact on Health Centers
Even though our patients were exclusively Medicaid recipients, adherence rates were similar to rates that have been reported in previous literature, which typically describes adherence in well-insured patient populations. Our study also differed from most published literature in that non-English speaking patients were not less adherent than English speaking patients. This may speak to the value of providing care in a patient’s preferred language at our Community Health Center. Data from this study will be used towards the development of future targeted interventions to continually improve medication adherence in specific patient groups.
Creating a Culture of Safety: Medication Adverse Event Tracking at a Pediatric Oncology Hospital in Guatemala

Jessica White PharmD, BCPPS, Julie Gegg PharmD, BCOP, Liliana Zelaya RN, BSN and Emily Dray, RN, BSN, CCRN

Abstract:

Objectives: The primary objective of this quality improvement project is to improve patient safety and decrease nursing and pharmacy workload by implementing an adverse event reporting system that focuses on medication adverse events. The Adverse Event Reporting System will be utilized to detect system strengths and weaknesses and identify opportunities for system improvement. By ensuring a non-punitive system and multidisciplinary approach to root cause analysis, the Adverse Event Reporting structure will foster the development of a culture of safety among physician, nursing, and pharmacy staff hospital wide.

Background/significance: The ECHO Project: Educacion de Cuidados Intensivos en un Hospital de Oncologia is a multidisciplinary educational collaborative between Boston Children’s Hospital and Unidad Nacional de Oncologia Pediatric (UNOP). The initial goal of the partnership was to facilitate the development of an acute care nursing orientation and continuing education curriculum for the hospital and has grown to encompass other strategic goals. The current ECHO Project team, consisting of two Boston Children’s Staff Nurses and two Boston Children’s Clinical Pharmacists, traveled to Guatemala in January and May of 2016 for quarterly site visits. An assessment of pharmacy systems and evaluation of processes already in place to ensure medication safety was performed. The need for a comprehensive medication adverse event tracking system was uncovered in the context of unknown error frequency or classification. The ECHO team formed a multidisciplinary group with UNOP pharmacists, nurses and administration to begin this process.

The Harvard Medical Practice Study demonstrates that medication errors are the most frequent type of medical adverse event; it is for this reason that medication event tracking is the focus for the initial stage of this quality improvement project (Kaushal et al., 2004). It is well delineated in the literature that adverse drug events are preventable. Pediatric patients are a high risk group when it comes to medication adverse events for several reasons, including, but not limited to: weight-based dosing, dilutions to stock medications are needed to create appropriate dosing, and wide variations in organ function (Kaushal et al., 2004). Pediatric cancer patients are at especially high risk due to the potential for both toxicity and treatment failure with medication errors (Oberoi, Trehan, & Marwaha, 2014). There is a paucity of literature with regard to medication error rates among pediatric oncology patients, especially in low resources settings. This quality improvement project will contribute to the knowledge base while at the same time directly impacting the quality of patient care. The creation of safer systems has the potential to improve patient outcomes, decrease morbidity and mortality, and provide cost saving benefits.
Methods:
Using the Plan-Do-Study-Act method for quality improvement we will implement a hospital-wide medication adverse event tracking system in collaboration with a multidisciplinary team of Boston Children’s Hospital experts and UNOP leaders.

- Identify key stakeholders at UNOP and at BCH to define the project team and leaders. Engagement of hospital leadership at UNOP.
- Perform a literature review to determine existing evidence on medication error frequency and tracking systems in low resource hospital settings.
- Create a medication adverse event reporting and tracking system protocol which includes designing a reporting form that is easily accessible to all staff and user friendly.
- Design and implement Medication Adverse Event Tracking training for all levels of hospital staff.
- Tracking of medication adverse events to identify system strengths and weaknesses.
- Multidisciplinary root cause analysis to assess findings and implement changes based on institutional needs, resources, and limitations.

Findings: TBA

Implications/next steps:
Medication errors are a global health care issue and in low-resource settings there is a lack of infrastructure to support non-punitive identification and correction of systems errors that contribute to medication adverse events. This quality improvement project takes a systems approach to medication adverse events to identify medication error frequency, define systems strengths and weaknesses, and promote solutions to increase patient safety and reduce nursing and/or pharmacy workload. Collaboration with our colleagues at UNOP is essential to design a successful and sustainable system that meets institutional standards and needs.

References:
Title: A LEAN MANAGEMENT APPROACH TO IMPROVING MEDICATION RECONCILIATION

Authors: Ucheoma Nwizu PharmD, Zach Rosko PharmD, BCPS, Mike Fite, MD, ScM, FAAFP

Abstract:
Introduction: Medication reconciliation has been advocated by national health regulatory organizations as a means of promoting patient safety. Obtaining and communicating a complete and accurate medication list is the cornerstone of an effective medication reconciliation process. Despite the recognition of the importance of accurate medication list, it is challenging in primary care clinics with a high-volume practice. The patient load is often comprised of several chronically ill patients who may use multiple pharmacies and multiple healthcare providers with differing electronic health records or multiple data entry points in the same electronic health records. There is evidence demonstrating the effectiveness of standardized medication reconciliation in improving the accuracy of patients’ medication list in the outpatient setting. The purpose of this study is to demonstrate the impact of utilizing the Lean Management approach to improve work flow and implement a standardized medication reconciliation process in a not-for-profit, Federally Qualified Health Center (FQHC) serving the underserved and at-risk patients.

Methodology: Current work flow will be mapped through direct observation of rooming activities. Baseline data will be assessed for the occurrence of medication reconciliation, completeness of the in medication reconciliation history taking. Observation will be analyzed, interventions developed and implemented based on gaps detected and will include workflow redesign involving a standardized medication reconciliation process with apportioning of responsibilities; education of patients to encourage participation in medication reconciliation and training of staff to obtain the best possible medication list. Audits will be performed by direct observation of rooming process at, 6 and 12 months following intervention for quality assurance and determination of impact of interventions. Outcome measures will include changes in the following: number of medication reconciliations completed, completeness of the medication reconciliation history taking, and medical assistants attitude to medication reconciliation improvement and standardization process.

Completeness of the medication reconciliation history taking is defined as the inclusion of questions regarding all medications including OTC medications, vitamins and herbal supplements and for each medication, the medication name, dose, frequency, and route of administration.

Results: To be determined

Conclusion: To be determined
Antimicrobial stewardship program: Guidelines for implementing antimicrobial stewardship program in children's cancer hospital 57357

Sherif Kamal

Abstract:

Background
The inappropriate use of antibiotics has been linked to the increase of antibiotic resistance and other collateral damage.

In the United States (in 2009) approximately $10.7 billion was spent on antibiotic therapy, this is more than the projected Egyptian defense budget $8.5 billion in 2019.
The spending of antibiotics in the USA includes $6.5 billion, $3.6 billion, and $526.7 million in the outpatient, inpatient acute, and long-term care settings, respectively (Suda KJ 2009).

In the USA Antibiotics cause approximately 142,000 adult emergency department visits annually for adverse drug reactions; almost four out of five of these visits are for allergic reactions (Shehab N et al 2008).
The cost of antibiotic resistance to the U.S. economy is an estimated $20 billion annually in excess direct health care costs, with an additional $35 billion in lost productivity (CDC 2013).

Worldwide, increases were also significant for two “last-resort” antibiotic classes: carbapenems (approximately 40 percent) and polymixins (13 percent) (Van Boeckel et al. 2014 based on IMS MIDAS). The growth in retail carbapenem sales was particularly steep in India, Pakistan, and Egypt (some drugs may have been prescribed in hospitals and filled at a pharmacy)

Antimicrobial stewardship is developing as an intervention for optimizing antimicrobial therapy in healthcare settings. Antimicrobial stewardship programs aim to improve patient care and delay the emergence and spread of multidrug-resistant organisms by supporting rational antimicrobial use.

There are several methods by which the use of antimicrobials can be intervened upon by ASPs; most fall into two basic categories: restriction of antimicrobial before they are dispensed initially, often called “prior approval” and review and feedback regarding antimicrobial use sometime after prescription, often called “post-prescription review.”

Purpose
To develop the framework for antimicrobial stewardship program

Method
This study was conducted at 57357 Children's Cancer Hospital in Cairo. First of all we based our guidelines on a review of published studies identified through a search using different
databases (search terms used alone and in combination included "antimicrobial", "stewardship", "management", "resistance", "education", "guidelines", "restriction", "implementation", "order forms", and "combination therapy") supplemented by review of references of relevant articles to identify additional reports.

An antimicrobial management team was conducted to actively monitor and intervene on restricted antimicrobial treatments on all inpatient wards. The team consists mainly of two pharmacy students under the supervision of clinical pharmacists working in the hospital. The team members agreed on a list to be filled in order to collect patients’ data, including our study’s main concerns: age, gender, diagnosis, allergies, mucositis grading, serum creatinine, microbiology lab results, antibiotics and antifungal medications, neutrophil count fever’s degree, medications’ duration as well as their length of stay in the hospital. Then, we started to collect data from supportive care, ICU, step-down, bone marrow transplantation and post-surgical patients by querying the hospital’s Cerner pharmacy database, using patients’ medical record number (MRN). The list was provided to the team as a Microsoft Excel worksheet. The team also used patients’ charts if additional information were still needed to assess the appropriateness of the antimicrobial therapy.

The team then reviewed the patients’ charts and only intervenes on patients who were receiving a restricted antimicrobial including Vancomycin, Carbapenems, Voriconazole and liposomal amphotericin B. They reported on patients who didn’t possess pre-printed orders for restricted antimicrobials signed by an infectious disease physician.

During the phase of data collection, we found it necessarily to generate a list containing the most common drugs used in the hospital classified as high or low risk if used for G6PD deficient patients as well as a suggested alternative for each drug. This list was generated by collaboration with the DIC "drug information center" of the hospital, and after approvals it will be attached to patients' files.

Results
This study has been done on a total number of 134 patients. The information was collected from all over the hospital including surgical department, ICU, step-down, bone marrow transplant department and normal supportive care. The only department that has been excluded is the outpatient unit. The study has been performed within the period from 23.8.2010 till 8.9.2010. The 134 patient are divided into 65% males and 35% females. The age of the patients had many variations. 2 patients were less than 1-year-old; the majority of patients ranged from 1 to 6 years in which; 37 patients had 1-3 years old and 34 patients had 4-6 years old. 21 patients had 7-9 years old, 13 patients had 10-12 years old, 14 patients had 13-15 years old and finally 9 patients had 16-18 years old which is the minority. As for their classification according to their diagnosis; there were found about 12 main diagnoses all over the hospital. 35 patients were diagnosed with ALL (acute lymphocytic leukemia), 19 had AML (acute myeloid leukemia), 12 had N.B (neuroblastoma), 14 had NHL (non-Hodgkin lymphoma), 6 had Ewig’s sarcoma, 3 patients had M.B, 5 patients had Cranio (brain tumor), 12 had RMS (rahbdomyosarcoma), 6 had O.S (osteosarcoma), 2 patients had GCT (germ cell tumor), and another 2 had GNB. There were other diagnoses found but in a very minor scale in which only one patient is diagnosed by each. Those are Mediastinal mass/ immunophenotuding, NPC/soft tissue tumors, papillary thyroid tumors, PCF-SOL & cx lymphopathy, Pt. optic glioma, Synovial sarcoma. This classification can’t be put in the form of
percentage because the diagnosis was not documented in all patients’ files. About 10% of the patients had no documented diagnosis

Conclusion
Following this study, the pharmacy and therapeutic committee was briefed and approve the pharmacy produced restricted drug list and preprinted orders. In the following months the physician compliance to restricted forms and rational prescription approached 100%.