THEORY BURST: LEARNER ASSESSMENT

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IPEP Interprofessional Education & Practice

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Interprofessional Faculty Team

**Current Faculty**
- Kevin Driesen, PhD, Public Health
- Cathy Michaels, PhD, RN, Nursing
- Yvonne Price, MAMC, Public Health
- Kenneth Schachter, MD, MBA, Public Health
- Ernie Schloss, PhD, Public Health
- Terri L. Warholak, PhD, RPh, Pharmacy

**Former Faculty**
- Hillary Franke, MD, MS, Medicine
- Joe Gerald, MD, PhD, Public Health
- Barbara Brewer, PhD, RN, Nursing

**With Help From**
- Ronald Weinstein, MD, Medicine & AZ Telemedicine
- Mike Griffith, BS, UA Biomedical Communications
“All health professionals should be educated to deliver patient-centered care as members of an interdisciplinary team, emphasizing evidence-based practice, quality improvement approaches, and informatics.”
Rationale
Evolution

Five IP Colleagues

More than one faculty member (discipline) providing feedback each week

Three Credit Class in Health Care Quality & Safety

Graduate Credit

Modularized, so can be used for continuing education or other offerings

Offered via various media over time
Each week is a PDCA cycle
Each class is a PDCA cycle
Class development template
  - For technology
  - For content
Weekly activities and student projects
Evolution
### Weekly activities

<table>
<thead>
<tr>
<th>Module 1: Ice Breaker Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>57 messages - 57 unread</td>
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<table>
<thead>
<tr>
<th>Module 1: &quot;What is Quality?&quot; Activity</th>
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<td>24 messages - 24 unread</td>
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<tr>
<th>Module 2: &quot;Social Determinants of Health&quot; Activity 1</th>
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<td>16 messages - 16 unread</td>
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<tr>
<th>Module 2: &quot;Social Determinants of Health&quot; Activity 2</th>
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<td>20 messages - 20 unread</td>
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<table>
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<tr>
<th>Module 2: &quot;Making the Business Case for Quality&quot; Activity 3</th>
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<tbody>
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<table>
<thead>
<tr>
<th>Module 3: Quality Reporting, Defining Quality Problems, and Quality Improvement Activity 1</th>
</tr>
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<tbody>
<tr>
<td>44 messages - 40 unread</td>
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<table>
<thead>
<tr>
<th>Module 3: Quality Reporting, Defining Quality Problems, and Quality Improvement Activity 2</th>
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<tr>
<td>33 messages - 32 unread</td>
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<tr>
<th>Module 4 Activity 1: Root Cause Analysis</th>
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<tr>
<td>35 messages - 35 unread</td>
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Available after Sep 10, 2011 8:00 AM
**KIRKPATRICK MODEL**

**Level 1 Reaction:** To what degree participants react favorably to the training

**Level 2 Learning:** To what degree participants acquire the intended knowledge, skills, attitudes, confidence and commitment based on their participation in a training event

**Level 3 Behavior:** To what degree participants apply what they learned during training when they are back on the job

**Level 4 Results:** To what degree targeted outcomes occur as a result of the training event and subsequent reinforcement

## MODIFIED KIRKPATRICK TYPOLOGY

<table>
<thead>
<tr>
<th>Modified Kirkpatrick Typology</th>
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<tbody>
<tr>
<td><strong>Level 1 – Reaction</strong></td>
<td>Learners' feedback about the learning experience.</td>
</tr>
<tr>
<td><strong>Level 2a – Modification of attitudes/perceptions</strong></td>
<td>Changes in learner attitudes or perceptions.</td>
</tr>
<tr>
<td><strong>Level 2b - Acquisition of knowledge/skills</strong></td>
<td>Changes in learner knowledge and skills.</td>
</tr>
<tr>
<td><strong>Level 3 - Behavioural change</strong></td>
<td>Learners’ transfer of learning to the practice setting.</td>
</tr>
<tr>
<td><strong>Level 4a – Change in organisational practice</strong></td>
<td>Wider changes in the organisation and delivery of care.</td>
</tr>
<tr>
<td><strong>Level 4b – Benefits to patients/clients/populations</strong></td>
<td>Improvements in health or well-being of patients/clients/populations.</td>
</tr>
</tbody>
</table>
Learners’ feedback about the learning experience.
This is such a great opportunity to work with real quality improvement since our project emerged from the real situation going on right now. To get this project done, we used several of what we have learned in those model to identify the problem. For example, we addressed the "structure" and "process" of how the sharp devices were used, who involved with these devices, how they were sent down. Then, we used PDCA through phrase I-V.
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It was great to have input from each team member as individual contributions were much richer when combined as a team effort. Various perspectives were complementary and served to provide for more robust solutions. The experience that each team member brought with them helped immensely to provide a more dimensional solution. This project was a worthy endeavor as it deals with risk to staff health and wellness.
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Our group put plenty of work into our quality improvement project and I am proud of what we were able to accomplish. The process of putting together the QI project was such a great learning experience. I now understand how to look at areas that could use improvement and the steps that are involved in preparing for a QI project. I believe I am more comfortable with preparing a data collection form, preparing a code book, the process of collecting data, preparing an intervention, and analyzing the results. I know these are valuable skills that we've learned and will be using again in our near future, especially with our senior projects.
“Looking at QI from an interprofessional perspective is essential. Our project would not have been as good if it was not interprofessional.”

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“I would have done this without a grade”
"Looking at QI from an interprofessional perspective is essential. Our project would not have been as good if it was not interprofessional."

It was great to have...

"I would have done this without a grade"

Our group put plenty of work into our quality improvement project and I am proud of what we were able to accomplish...

"The project was an important one and we were all eager to solve it."

The process of improving...

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“Looking at QI from an interprofessional perspective is essential. Our project would not have been as good if it was not interprofessional.”

It was great to have a variety of perspectives brought with them. 

“*I would have done this without a grade*”

Our group put plenty of work into our quality improvement project and I am proud of what we were able to accomplish. 

“The project was an important one and we were all eager to solve it.”

Our collection form, preparing a code book, the process of collecting data, preparing an intervention, and analyzing the results. I know these are

“The *interprofessional* aspect of this project changed how I will view the other professions forever – I have so much respect for what everyone does.”
The topic of our quality improvement project, alcohol withdrawal patient management, was interesting to me and I was excited about it. When we began, we were part of an inter-professional team working on multiple arms of a study on the treatment of alcohol withdrawal patients in the trauma unit. One team looking at the use of CIWA assessment scoring (us) and another team was to look at the outcomes when CIWA was not used (medical staff). However, I was disappointed with how this project progressed. After spending an entire fall semester talking about this project, in the spring semester we discovered that there was no other team, our study population was too small, and we had to change everything and rewrite everything at the last minute. Obtaining a query, obtaining computer access at the UAMC, and performing the analysis were all things that took way more time than should have. In retrospect, the wasted time spent could have been avoided had we attained access to the computers and attained our patient sample query sooner. Finally, after hours were spent doing chi-squares that we were told we would have to do, we had no significant findings and we would not have had enough room on our poster to write about it, even if we did have significant findings. In fact, the only finding that has any implications for the future of UAMC was that 6,800 patients were managed with CIWA and only 355 patients had alcohol withdrawal. We actually had no contribution to this finding since our preceptor discovered it when she was querying the hospital's database for a new patient population after our original study population only had six patients in it. Overall, I can't think of a single aspect of this project that did not disappoint me somehow and therefore I am 99% sad and 1% happy that at least we are mostly done.
Changes in learner attitudes or perceptions.
**Interprofessional Quality and Safety Questionnaire**

**Directions:** Using the scale provided, please rate each statement by circling the response that best describes how you felt before taking this class and as you feel now. Example: If you did not feel at all knowledgeable about methods to reduce quality and safety before taking this class, circle ‘Weak’ on the **Before** side. If you feel very knowledgeable after taking this class, circle ‘Very Good’ on the **After** side.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>My ability to <strong>identify</strong> medical errors</td>
<td>Weak, Fair, Good, Very Good</td>
<td>Weak, Fair, Good, Very Good</td>
</tr>
<tr>
<td>My knowledge of methods to reduce medical errors</td>
<td>Weak, Fair, Good, Very Good</td>
<td>Weak, Fair, Good, Very Good</td>
</tr>
<tr>
<td>My ability to implement methods to reduce medical errors</td>
<td>Weak, Fair, Good, Very Good</td>
<td>Weak, Fair, Good, Very Good</td>
</tr>
<tr>
<td>My motivation to implement methods to decrease medical errors</td>
<td>Weak, Fair, Good, Very Good</td>
<td>Weak, Fair, Good, Very Good</td>
</tr>
<tr>
<td>My awareness of the impact of medical errors on patient health</td>
<td>Weak, Fair, Good, Very Good</td>
<td>Weak, Fair, Good, Very Good</td>
</tr>
</tbody>
</table>
**Directions:** Using the scale provided, please rate each statement by circling the response that best describes how you felt before taking this class and as you feel now.

<table>
<thead>
<tr>
<th>I feel…</th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is important for health professional students to learn Quality Improvement.</td>
<td>Disagree</td>
<td>Somewhat Disagree</td>
</tr>
<tr>
<td>Decreasing medical errors is a major issue.</td>
<td>Disagree</td>
<td>Somewhat Disagree</td>
</tr>
<tr>
<td>Taking this class will help me to be a better health care provider.</td>
<td>Disagree</td>
<td>Somewhat Disagree</td>
</tr>
<tr>
<td>This class provided information that I will use.</td>
<td>Disagree</td>
<td>Somewhat Disagree</td>
</tr>
</tbody>
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INNOVATIONS IN TEACHING

Application of Quality Assurance Principles: Teaching Medication Error Reduction Skills in a “Real World” Environment

Legend

<table>
<thead>
<tr>
<th>Color</th>
<th>Value (Logits)</th>
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<tbody>
<tr>
<td>Red</td>
<td>W = Weak</td>
</tr>
<tr>
<td>Yellow</td>
<td>F = Fair</td>
</tr>
<tr>
<td>Turquoise</td>
<td>G = Good</td>
</tr>
<tr>
<td>Green</td>
<td>V = Very Good</td>
</tr>
</tbody>
</table>

- W = Weak
- D = Disagree
- SWD = Somewhat Disagree
- SWA = Somewhat Agree
- A = Agree

"::" Indicates half-score point
* indicates item hierarchy placement for posttest
Core competencies for Interprofessional Collaborative Practice

http://www.aacn.nche.edu/education-resources/IPECRreport.pdf
Changes in learner knowledge and skills.
Wiki #2 must include the following:

Items to add to wiki#1:

1) preceptor name, site and contact information;
2) describe the QI project selected in as much detail as you can;
3) provide a detailed description of the area chosen for study: describe the setting in which you will do the project;
4) describe the portion of the medication use process involved if applicable (e.g., prescribing, dispensing, administering, monitoring);
5) indicate what data are available and how you will obtain them;
6) state why the proposed project is important;
7) relate the proposed project to the literature (i.e., find two articles from the primary literature that indicate what is already known about the problem and describe each article briefly);
8) state the global goal of the project (Hint – Some options may include: a. Discovery; b. Frequency estimation; c. Measure of a change; or a combination) Note: Goal should relate to project; and
9) state the specific goal(s) of the project.
Student learning

4. Topic list (see below for details on each)
#1 Reducing ICU Delirium
#2 Promote Use of Personal Digital Assistants (PDAs)
#3 Community Quality /Safety
#4 Preventing Medication Errors
#5 Patient Safety and Quality in Home Health Care
#6 Medical Errors and Transparency in Reporting
#7 Pay for performance (Quality & Outcomes Framework)

#1 Reducing ICU Delirium
Patients have delirium in medical settings due to a variety of factors. Persistent delirium has been shown to create a high level of morbidity. 50% of patients that get this from being in an isolated unrecognizable situation to themselves in a hospital will eventually be dismissed and go home. However the other 50% who are eventually discharged, 80% within one year end up in a nursing home or dead.

#2 Promote use of Personal Digital Assistants (PDAs) by hospital health care professionals: the availability of health care applications for devices such as PDAs, smartphones and tablet computers is expanding rapidly. These portable devices can help nurses track patient vital signs, medications, plan of care and much more, can enable pharmacists to monitor medication allergies and drug interactions, can permit physicians to view reports and images at the bedside, and much more. However, many hospitals have policies banning the use of cell phones and other devices in patient care areas. Our team will identify the reasons for such bans and develop a plan to overcome resistance and promote widespread use of PDAs in hospital settings to improve quality and safety in health care. (see http://findarticles.com/p/articles/mi_m3257/is_5_56ai/ai_80084167/ for more information.)
Inpatient Pain Medication Prescribing at UAMC
Andrea James, Chris Nagata and Soba Thamararajah
Dr. Kurt Weibel, Dr. Terri Warholak, & Dr. Kenneth Schachter

Background and Introduction
Background
- Narcotics have increased in both purchases and dispensing at University of Arizona Medical Center from 2007 to 2013 and the most prevalent increase was the class II narcotic oxycodone.
- Oxycodone dispensed to the inpatient population in 2013 was quadruple the amount dispensed in 2007.
- Deaths involving opioid analgesics increased from 4041 in 1999 to 14,659 in 2007.
- The drug overdose age-adjusted death rate per 100,000 people was 18.1 in 2008.
- The numbers of prescription painkillers sold per 10,000 people in 2010 was 8.4.
- Controlled Substances Prescription Monitoring Program (CSPMP) from H.B. 2136 and was developed to detect misuse of Schedule II, III, IV controlled substances under Arizona Uniform Controlled Substances Act. Authorized persons may request information to assist in treating patients.

Prior Research
- A systematic literature review compared three methods of pain scale ratings: Numerical Rating Scale, Verbal Rating Scale and the Visual Analogue Scale. Based on 54 papers, it was concluded that the Numerical Rating Scale was optimal for unidimensional pain intensity assessment.
- This outcome corresponds to current UAMC practice for inpatient population.

Purpose of Project
- The purpose of this project is to find out causes of increased narcotic, especially oxycodone, use in the inpatient population of UAMC.
- An additional question for this CI Team was to identify if the increased use of narcotics was appropriate?
- Identify methods to address inappropriate use and implications of this trend.

Objective
- To compare the prescription rates of pain medication, specifically oxycodone, between 2007 and 2013 and determine if statistically significantly different.
- Quality, for the purpose of this project, was defined as completeness of the information included on the medication reconciliation form.

Methods
- This quality improvement project was conducted at the University of Arizona Medical Center - University Campus.
- This study was a retrospective chart review to analyze the increase in oxycodone and other pain medication prescriptions.
- The charts included in this evaluation were randomly sampled from the inpatient population on the medical/surgical floor, 4W, from 2007 and 2013.
- Data collection forms were used to organize information collected from patient charts.
- Information included: pre and post medication pain assessments, pain medication taken before admission, prescribed during stay and at discharge.
- A sample size of 50 patients in each group was to be collected and a paired t-test with alpha value of 0.05 will be used to analyze if there is a statistical significance.
- Nursing survey was developed to collect data on nurse perception of pain management and what they perceive as the best method of pain management.
- Inclusion criteria: Patient prescribed pain medication and discharged from 4W at UAMC.
- 4W is the Cardiovascular/Intermediate Care Unit of the Medical/Surgical floor of the UAMC-University Campus.

Results
- Due to limited time, patient data were not collected from 2007 and statistical significance could not be determined.
- A total number of 50 patients randomly sampled patient charts were reviewed from 2013.
- Out of those 50 patients, 69% were administered the prescribed pain medication and 31% were not administered.
- As shown in Figure 1, 12% of all pain medications were prescribed before admission, 54% were prescribed after admission, and 34% were prescribed at discharge.
- Morphine was the most common pain medication prescribed after admission in 24% of patients and oxycodone was the most commonly prescribed pain medication at discharge in 12% of patients.
- According to nursing survey results, the most common pain medication prescribed to be administered was morphine.
- As seen in Figure 2, 50% perceived morphine was the most common pain medication used, 25% for oxycodone, and 19% for Percocet (oxycodone and acetaminophen).
- About 25% of nurses thought the best method to pain management was morphine.

Limitations
- The project was only conducted on 4W of UAMC-University Campus and is not generalizable to other medical facilities.
- The 2007 data were not available due to computer system speed delay. Thus, only the 2013 data were compiled.
- Surveys are assumed to be filled only by nurses working on 4W during shift change and not by other nurses or hospital staff.
- It is assumed that surveys are filled out to the best capability of nurses and overall stress from work did not affect nurses responses.

Conclusion and Discussion
- Most nurses perceive morphine as the most common pain medication used for pain management and from the chart review in 2013, morphine was the most common pain medication prescribed after admission.
- Out of all prescriptions, most were after admission and most likely due to acute pain from various diagnoses.
- Oxycodone was the most common pain medication prescribed after admission and further research will delve into why oxycodone is chosen.

Recommendations and Future Research
- Must collect randomly sampled inpatient charts from 2007 to determine if increase in oxycodone use, as well as other pain medication, is statistically significantly different
- In the future, examine what factors prompts decision to order pain medication, specifically oxycodone, after admission.
- Attempt to determine order pain medication, discover what prompts administration.
- Compare diagnoses and type of pain patient may present with to pain medication that patient was prescribed upon admission.
- Compare doses received as an inpatient to whether a pain medication was prescribed at discharge to see if there is a correlation.

Data
- Pain Medication Prescribing Trend
- Nurse Response to Pain Management

References
3. Arizona State Board of Pharmacy: Controlled Substances Prescription Monitoring Program. 2013

For more information, please contact:
Soba Thamararajah: thamararajah@pharmacy.arizona.edu
Andrea James: ajames@nursing.arizona.edu
Chris Nagata: nagata@email.arizona.edu
Kurt Weibel: kurt.weibel@uhealth.com
Terri Warholak: warholak@pharmacy.arizona.edu
Evaluation of a Student Interprofessional Quality Improvement Pilot Program

Patrick Campbell PharmD student
Sally Riggs MPH/MSW, DrPH student
Michelle Winters RN, MBA, BSN, PhD student
Terri Warholak PhD, RPh

Introduction
- Interprofessional Education (IPE)
  - Interprofessional teams have been found to improve the quality of patient care by lowering health care costs, decreasing length of stay, and reducing medical errors [1].
  - IPE involves educators and students from two or more professions working together to create and foster a collaborative learning environment [2].
- The IOM visions states that “all healthcare professionals should be educated to deliver patient-centered care as members of an interdisciplinary team emphasizing evidence-based practice, quality improvement approaches and informatics” [3].
  - During the past decade, these competencies have begun to redefine accreditation standards of clinical education.
- Established in 2005, the University of Arizona’s Interprofessional Education and Practice (IPEP) Program created teams of students from pharmacy, medicine, nursing, public and law in order to enhance the learning experience both in the classroom and out in the community.

Objectives
- Conduct a program evaluation of the University of Arizona Interprofessional Education and Practice (IPEP) Quality and Safety Team Pilot Program.
- Survey student participants of the IPEP Quality and Safety Team Pilot Program to assess the program goals, timeline, and the site selection of projects.

Methods
- The authors conducted a program evaluation of two student centered Interprofessional Quality Improvement Pilot Projects.
  - One team was comprised of students new to the Quality improvement field (novice group, N=3), and the other team was comprised of students with some classroom knowledge and field experience (expert group, N=3).
  - Using a convenience sample (N=6), a questionnaire was administered to each participating student electronically. (Figure 1)
  - The following three domain were evaluated: the Project, the Site and the Team.
  - The range of responses were ordinal (strongly disagree, disagree, agree, strongly agree).
  - There was also a section at the end of the questionnaire for students to add additional comments.
  - Frequencies of responses were calculated using SPSS 21.0 for descriptive purposes.

Results
- The data were stratified by group (novice vs. expert) (See Figure 2).
- Project
  - Both groups reported clear understanding in regards to timelines and expectations of the project.
  - 66.7% of the sample disagreed with the statement “There was adequate time to complete the project.”
- Site
  - While 100% of the novice group agreed site personnel were informed of the project, 100% of the expert group disagreed.
  - While 100% of the novice group agreed with the statement “site personnel were supportive of the process,” 100% of the expert team disagreed with the statement.
- Team
  - Both teams strongly agreed with all the questionnaire items specific to the team domain. (See Figure 1).

Limitations
- One limitation of the study is the small sample size.
  - A larger sample size would add power to the study.
- There was also a lack of consistency in the recruitment method of the student interprofessional team members.
- Methods used to recruit students included both self-selection and direct faculty recruitment.
- The students participating in this pilot program may not be representative of the broader student population.
- The survey instrument designed for this study was not pilot tested prior to implementation.
- Subsequently, the reliability and validity of the instrument has yet to be determined.

Data
- Figure 2. Graphs of Novice and Expert Group Questionnaire Results
- IPEP Quality and Safety Pilot Novice Group Questionnaire Results
- IPEP Quality and Safety Pilot Expert Group Questionnaire Results

Conclusions and Implications
- This was a successful interprofessional pilot program.
  - Student survey responses included phrases like: “This was an amazing experience! I enjoyed the interprofessional contact” and “the team was fully committed and engaged”
  - The work of the interprofessional team improves care processes through collaboration and communication between disciplines.
  - Adding team members from other health disciplines will continue to strengthen quality improvement projects and patient safety.
  - Interprofessional team skills acquired in clinical education will translate to future practice, supporting patient safety and clinical outcomes [1].

Recommendations and Future Research
- Consider IPEP implementation over two semesters to allow for engagement of community site personnel.
  - Preceptors should be adequately prepared for the project, including clarity of role and time commitment.
  - Additional disciplines should be added to the IPEP teams: medical, engineering, law and social work students.
- Future Research
  - Continue to evaluate these projects based on the following domains: site, personnel and project.
  - Evaluate program with the inclusion of other disciplines.

References

For more information, please contact:
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Sally Riggs: sriggs@email.arizona.edu
Michelle Winters: mwinters@email.arizona.edu
Terri Warholak: warholak@pharmacy.arizona.edu
## Poster Design

1. **Appearance**  
   Should be neat, professional, creative, and informative.  
   - Unacceptable  
   - Barely Acceptable  
   - Acceptable  
   - Good  
   - Very Good  
   - Exceptional

2. **Organization**  
   Sections should be presented in a logical manner.  
   - Unacceptable  
   - Barely Acceptable  
   - Acceptable  
   - Good  
   - Very Good  
   - Exceptional

3. **Clarity**  
   The poster should be understandable and easy to read.  
   - Unacceptable  
   - Barely Acceptable  
   - Acceptable  
   - Good  
   - Very Good  
   - Exceptional

## Project Introduction

4. **Problem Description**  
   Should describe practice setting, the portion of the medication use process where the problem occurs if applicable, and baseline data (if possible).  
   - Unacceptable  
   - Barely Acceptable  
   - Acceptable  
   - Good  
   - Very Good  
   - Exceptional

5. **Problem Importance**  
   State why the problem is important.  
   - Unacceptable  
   - Barely Acceptable  
   - Acceptable  
   - Good  
   - Very Good  
   - Exceptional

6. **Literature Review**  
   Relate the problem to the literature – Reference at least (3) peer-reviewed articles from the primary literature.  
   - Unacceptable  
   - Barely Acceptable  
   - Acceptable  
   - Good  
   - Very Good  
   - Exceptional

## Project Objectives

7. **Objectives**  
   Specific objectives should be clearly stated and relate to the problem described in the Project Introduction.  
   - Unacceptable  
   - Barely Acceptable  
   - Acceptable  
   - Good  
   - Very Good  
   - Exceptional

## Project Methods

8. **Intervention**  
   Describe and justify the intervention made.  
   - Unacceptable  
   - Barely Acceptable  
   - Acceptable  
   - Good  
   - Very Good  
   - Exceptional

9. **Processes and Outcomes Measured**  
   Describe and justify the processes and outcomes measured (should relate to Goals and Objectives).  
   - Unacceptable  
   - Barely Acceptable  
   - Acceptable  
   - Good  
   - Very Good  
   - Exceptional

10. **Data Collection Procedures**  
    Measurement methods should be clearly described and appropriate. Should include sample selection.  
    - Unacceptable  
    - Barely Acceptable  
    - Acceptable  
    - Good  
    - Very Good  
    - Exceptional

11. **Data Analysis**  
    Planned statistical analysis should be clearly described and appropriate.  
    - Unacceptable  
    - Barely Acceptable  
    - Acceptable  
    - Good  
    - Very Good  
    - Exceptional
<table>
<thead>
<tr>
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<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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<tr>
<td>12.</td>
<td><strong>Sample Description</strong></td>
<td></td>
<td></td>
<td>Unacceptable</td>
<td>Barely Acceptable</td>
<td>Acceptable</td>
<td>Good</td>
<td>Very Good</td>
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<tr>
<td></td>
<td>Type and size of sample should be clearly described.</td>
<td></td>
<td></td>
<td>Unacceptable</td>
<td>Barely Acceptable</td>
<td>Acceptable</td>
<td>Good</td>
<td>Very Good</td>
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<tr>
<td>13.</td>
<td><strong>Results Presented</strong></td>
<td></td>
<td></td>
<td>Unacceptable</td>
<td>Barely Acceptable</td>
<td>Acceptable</td>
<td>Good</td>
<td>Very Good</td>
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<tr>
<td></td>
<td>Results should be reported for each stated objective. Result presentation should include graphs and/or charts. Only facts should be included.</td>
<td></td>
<td></td>
<td>Unacceptable</td>
<td>Barely Acceptable</td>
<td>Acceptable</td>
<td>Good</td>
<td>Very Good</td>
</tr>
<tr>
<td></td>
<td><strong>Project Implications and Conclusions</strong></td>
<td></td>
<td></td>
<td>Unacceptable</td>
<td>Barely Acceptable</td>
<td>Acceptable</td>
<td>Good</td>
<td>Very Good</td>
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<tr>
<td>14.</td>
<td><strong>Conclusions</strong></td>
<td></td>
<td></td>
<td>Unacceptable</td>
<td>Barely Acceptable</td>
<td>Acceptable</td>
<td>Good</td>
<td>Very Good</td>
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<tr>
<td></td>
<td>Describe the conclusions your team came to after examining the data.</td>
<td></td>
<td></td>
<td>Unacceptable</td>
<td>Barely Acceptable</td>
<td>Acceptable</td>
<td>Good</td>
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<tr>
<td>15.</td>
<td><strong>Implications</strong></td>
<td></td>
<td></td>
<td>Unacceptable</td>
<td>Barely Acceptable</td>
<td>Acceptable</td>
<td>Good</td>
<td>Very Good</td>
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<tr>
<td></td>
<td>Describe why these results are important and what actions need to take place.</td>
<td></td>
<td></td>
<td>Unacceptable</td>
<td>Barely Acceptable</td>
<td>Acceptable</td>
<td>Good</td>
<td>Very Good</td>
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<tr>
<td>16.</td>
<td><strong>Limitations</strong></td>
<td></td>
<td></td>
<td>Unacceptable</td>
<td>Barely Acceptable</td>
<td>Acceptable</td>
<td>Good</td>
<td>Very Good</td>
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<tr>
<td></td>
<td>Describe research limitations.</td>
<td></td>
<td></td>
<td>Unacceptable</td>
<td>Barely Acceptable</td>
<td>Acceptable</td>
<td>Good</td>
<td>Very Good</td>
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<tr>
<td>17.</td>
<td><strong>Future Research</strong></td>
<td></td>
<td></td>
<td>Unacceptable</td>
<td>Barely Acceptable</td>
<td>Acceptable</td>
<td>Good</td>
<td>Very Good</td>
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<tr>
<td></td>
<td>Recommendations for additional research at site.</td>
<td></td>
<td></td>
<td>Unacceptable</td>
<td>Barely Acceptable</td>
<td>Acceptable</td>
<td>Good</td>
<td>Very Good</td>
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<td></td>
<td><strong>Poster Presentation</strong></td>
<td></td>
<td></td>
<td>Unacceptable</td>
<td>Barely Acceptable</td>
<td>Acceptable</td>
<td>Good</td>
<td>Very Good</td>
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<tr>
<td>18.</td>
<td><strong>Presentation</strong></td>
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<td>Barely Acceptable</td>
<td>Acceptable</td>
<td>Good</td>
<td>Very Good</td>
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<tr>
<td></td>
<td>Each student should take part.</td>
<td></td>
<td></td>
<td>Unacceptable</td>
<td>Barely Acceptable</td>
<td>Acceptable</td>
<td>Good</td>
<td>Very Good</td>
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<tr>
<td>19.</td>
<td><strong>Attitude</strong></td>
<td></td>
<td></td>
<td>Unacceptable</td>
<td>Barely Acceptable</td>
<td>Acceptable</td>
<td>Good</td>
<td>Very Good</td>
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<tr>
<td>20.</td>
<td><strong>Work ethic</strong></td>
<td></td>
<td></td>
<td>Unacceptable</td>
<td>Barely Acceptable</td>
<td>Acceptable</td>
<td>Good</td>
<td>Very Good</td>
</tr>
</tbody>
</table>
Learners’ transfer of learning to the practice setting.
Team Member Professionalism Assessment Form

Directions: Please provide an individual assessment for each teammate. Check the response that best represents your assessment for each question. (Receive 10 points if you complete 1 form for each team member)

Your Name: __________________________________________

Points
Always = 5 points
Sometimes = 3 points
Never = 0 points

Note: If a team member receives a score lower than “always” points will be deducted from his/her team project grade. For example, if student X receives one rating of “sometimes” from three different team members, his/her team grade will be deducted by (3 x 2 = 6) 6 points.

<table>
<thead>
<tr>
<th>Assessment Item</th>
<th>Never</th>
<th>Sometimes</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Is cooperative</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Accepts feedback</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Integrates feedback</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Produces quality work</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Acts professionally</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Produces work in a timely fashion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 Updates me on project progress</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 Is reliable</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Additional Comments (optional)

________________________________________________________________________

Team member Name: __________________________________________
**GROUP MEMBER EVALUATION:**

For each group member, discuss one positive trait and what it contributes to the group or project, and one area that could be improved, how improving it would help the group, and one way they might improve:

**Group:** ______________________

**Group member 1:** ____________

I feel you are doing well at __________________________. This helps our project because ____________________________________________.

I feel you could be doing better at ______________________. This would help our project because ____________________________________________.

One way you could improve this is by ____________________________.
Learners’ transfer of learning to the practice setting.
Evaluation of Appropriate Antibiotic Usage in Community-Acquired Pneumonia in Hospitalized Pediatric Patients: A Quality Improvement Project

Sarah Deitinger¹, Emily Kilber¹, Amy Nguyen¹, Elaine Truong¹, and Megan Brandon, PharmD²

1. University of Arizona College of Pharmacy, 2. University of Arizona Medical Center-Diamond Children's

Background and Introduction

Background:
- In 2011, the Infectious Diseases Society of America (IDSA) released clinical practice guidelines for the treatment of Community-Acquired Pneumonia (CAP) in pediatric patients. These guidelines recommend amoxicillin as the preferred parenteral therapy and amoxicillin as the preferred oral therapy for the treatment of uncomplicated pneumonia due to Streptococcus pneumoniae.
- Adherence to evidence-based guidelines has been shown to decrease morbidity and mortality.
- This project focuses on the prescribing portion of the medication use process at The University of Arizona Medical Center (UAMC) and Children's UAMC, which is a teaching hospital in Tucson, Ariz., and Children's Medical Center treats pediatric patients with a variety of conditions.

Supportive Research:
- Newman et al. found that implementation of clinical practice guidelines and an antimicrobial stewardship program in a children's hospital led to a significant increase in the use of amoxicillin for the treatment of uncomplicated CAP and speculated that this has the potential to minimize the development of resistant strains of bacteria.
- Smith et al. analyzed the importance of education and the use of guidelines for CAP in a pediatric setting and found significant changes in the prescription patterns after the creation of an antimicrobial stewardship task force and the release of the guidelines.
- McCrohon et al. examined the use of CAP guidelines in adults and discovered that the implementation resulted in a decrease in length of stay, duration of parenteral treatment, and in-hospital deaths.
- Dean et al. discovered an association between 30-day mortality, length of hospital stay, and readmission rates in CAP inpatient treatments when guidelines were appropriately used.

Goal:
- It is important to investigate prescribing patterns and assess adherence to guideline recommendations because this could improve patient outcomes and decrease antibiotic resistance.

Objectives
- Examine prescribing patterns for the treatment of CAP in pediatric patients in comparison to the IDSA treatment guidelines.
- Assess the effect of a brief educational intervention on prescribing practices.

Methods

Study Design: Retrospective chart review


Inclusion Criteria:
- Positive chest x-ray for pneumonia
- Inpatient order for antibiotic therapy
- Age > 3 months

Exclusion Criteria:
- Age < 3 months, > 18 years
- Aspiration pneumonia
- History of antibiotics for the treatment of pneumonia within the previous month
- Cystic fibrosis
- Viral pneumonia

Procedures:
- Data Collection: Electronic medical records of patients admitted to the 5th floor of UAMC Diamond Children’s Medical Center were evaluated.
- For patients who met the inclusion criteria, the following information was collected: sex, allergies, weight, age, antibiotic prescribed (name and dose), history of lung disease, chest x-ray results, and history of reason for admission as well as all of the prescriptions during the hospitalization.
- Pre-intervention data collection was conducted January 22, 2013 to February 14, 2013.
- Post-intervention data collection was conducted March 7, 2013 to April 4, 2013.

Intervention:
- A brief presentation on the pre-intervention results and the IDSA pediatric CAP guidelines (accounting for local susceptibility patterns and hospital formulary) was given to pediatric residents at teaching day on March 6, 2013.
- Pediatric residents were provided with a laminated reference card containing guideline recommendations on antibiotic selection and dosing to attach to their lanyards (Figure 1).

Statistical Methods:
- Chi-square test, a priori alpha < 0.05

Results

Table 1. Patient Characteristics (n=55)

<table>
<thead>
<tr>
<th>Age Range</th>
<th>Pre-Intervention</th>
<th>Post-Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 months – 10 years</td>
<td>5 months – 15 years</td>
<td></td>
</tr>
<tr>
<td>Mean Age</td>
<td>3.3 years</td>
<td>4.0 years</td>
</tr>
<tr>
<td>Median Age</td>
<td>3.0 years</td>
<td>1.8 years</td>
</tr>
<tr>
<td>Number of Males</td>
<td>16</td>
<td>12</td>
</tr>
<tr>
<td>Number of Females</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Total Number of Patients</td>
<td>24</td>
<td>21</td>
</tr>
</tbody>
</table>

Table 2. Antibiotic Usage in Pediatric Pneumonia Patients (n=55)

<table>
<thead>
<tr>
<th>Antibiotic</th>
<th>Pre-Intervention</th>
<th>Post-Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amoxicillin</td>
<td>18 (41)</td>
<td>14 (26)</td>
</tr>
<tr>
<td>Ceftriaxone</td>
<td>10 (23)</td>
<td>3 (5)</td>
</tr>
<tr>
<td>Clindamycin</td>
<td>5 (11)</td>
<td>7 (13)</td>
</tr>
<tr>
<td>Ceftazidime</td>
<td>5 (11)</td>
<td>1 (2)</td>
</tr>
<tr>
<td>Pneumococcal Augment</td>
<td>2 (5)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Cephalaxin</td>
<td>1 (2)</td>
<td>1 (2)</td>
</tr>
<tr>
<td>Total</td>
<td>44 (100)</td>
<td>37 (100)</td>
</tr>
</tbody>
</table>

Figure 1. Pediatric Pneumonia Guidelines Reference Card Intervention

Figure 2. Antibiotic Usage in Pediatric Pneumonia Patients (n=55)

Conclusion and Discussion

- Adherence to the IDSA pediatric CAP guidelines for parenteral therapy improved:
  - After the intervention, there was a statistically significant 5.4% increase in amoxicillin prescribing.
  - Additionally, there was a 3-fold decrease in ceftriaxone prescribing.
- Adherence to the IDSA CAP guidelines for amoxicillin was appropriate prior to the intervention and remained similar during the post-intervention period.
- Educational interventions improve adherence and may improve outcomes.

Limitations

- The pneumonia season time frame limited the total number of collected cases.
- The lack of patient outcomes measurements in comparison to antibiotic prescribed.
- The inability to measure the effects of antibiotic resistance in relation to guideline adherence.
- The ability to distinguish between antibiotics prescribed in the emergency department versus the pediatric floor based on electronic medical records.

Recommendations & Future Research

- Expand this quality improvement project to other locations in the hospital, including the emergency department.
- Examine the relationship between patient outcomes (e.g., length of stay and length of infusion therapy) and antibiotic prescribed.

References

For more information, please contact:
- Sarah Deitinger: deitinger@email.arizona.edu
- Amy Nguyen: amynguyen@childrensaz.org
- Elaine Truong: truongela@email.arizona.edu
- Megan Brandon: brandonm170@azmail.arizona.edu

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Adherence to the Infectious Diseases Society of America (ISDA) pediatric Community-Acquired Pneumonia (CAP) guidelines for parenteral therapy improved.

- After the intervention, there was a statistically significant 5-fold increase in ampicillin prescribing ($P = 0.015$)
- Additionally, there was a 3-fold decrease in ceftriaxone prescribing.

Adherence to the IDSA CAP guidelines for amoxicillin was appropriate prior to the intervention and remained similar during the post-intervention period.

Educational interventions improve adherence and may improve outcomes.
LEVEL 4B - BENEFITS TO PATIENTS/CLIENTS/POPULATIONS

Improvements in health or well-being of patients/clients/populations.
RESEARCH ARTICLES

Preceptor Perceptions of Pharmacy Student Team Quality Assurance Projects

Terri L. Warholak, PhD*

Objectives. To assess preceptors’ opinions of the impact of quality assurance projects.

Methods. Students were given the opportunity to directly apply material learned in class in a “real world” environment by completing a quality assurance project in a community or health-system pharmacy. All preceptors (n = 38) were contacted via telephone and given the opportunity to respond to open-ended questions concerning their experience with student-team quality assurance projects.

Results. Preceptors indicated the quality assurance projects benefited their practice sites by providing additional resources (53%, n = 19), decreased medication errors (22%, n = 8), and increased awareness of the importance of quality assurance (22%, n = 8). Ninety-four percent of respondents (n = 34) perceived the projects had a positive impact on patient care and 92% (n = 33) perceived a positive impact on themselves.

Conclusions. Preceptors felt that quality assurance projects performed by pharmacy-student teams were beneficial to patient care, the practice site, and themselves. The quality assurance projects have broad applications and can be added to a medication safety class or to the introductory pharmacy practice experience (IPPE) sequence.
1. How many years have you been a QA preceptor?
2. What is your current pharmacy practice setting?
3. How did the QA projects benefit your site?
4. How did the QA projects benefit patient health?
5. How did the QA projects benefit you?
6. Did you present the QA poster at a professional meeting? If ‘yes,’ which one?
7. What was the attitude of your staff about the QA project?
8. As a result of working with the QA students, how has your perception of the importance of QA in pharmacy practice changed?
9. What occurred during the process that improved your skills as a preceptor?
10. How do you perceive the QA projects will help us achieve full implementation of pharmaceutical care as accepted practice?
11. What was the best part of being involved with QA projects?
12. What is the one thing that would improve future QA projects?
13. What comments do you have?
Painless Pokes: Reducing Pain in Pediatric Patients

Allison Arterbury1, James Go1, Kevin Tran1, Lisa So1
Preceptors: Rachel Cramton MD2, 3, Hillary Franke MD, MS2, 3
University of Arizona Colleges of Pharmacy1 and Medicine2, and University of Arizona Medical Center-Diamond Children’s

Introduction

Pain is often undertreated in pediatric patients. Children are prone to anxiety and fear during hospital stays.1 Much of their fear is related to pain. Unlike adults, infants and young children have an increased inflammatory response and lack a central inhibitory influence, predisposing them to higher levels of pain and distress.1,2 To improve the quality of pediatric care, available measures should be utilized to prevent and control pain.

An opportunity for improved pain control is during intravenous (IV) cannulations and routine phlebotomy in pediatric patients. Many proven techniques to control pain during this procedure include the use of a treatment room, distractions, presence of a child life specialist, comfort holds, and the use of numbing medication.1-4

Background

Examples of numbing medication include LMX™, a topical preparation of 4% lidocaine cream, and J-Tip™, a new product. J-Tip™ is prepared in a non-invasive, needleless cartridge and works quickly and effectively.1 It is powered by compressed carbon dioxide. J-Tip™ introduces a small volume (between 0.25 mL and 0.5 mL) of 1% lidocaine solution subcutaneously and takes effect within 60 seconds.1 Studies have shown that J-Tip™ is more effective at numbing an injection site than LMX™. Another major benefit of J-Tip™ is its near instant effect, whereas LMX™ can take up to 30 minutes to produce anesthesia.2 As J-Tip™ becomes available at hospitals nationwide, it is imperative that health professionals are aware of its benefits and become trained to use it on their patients. The University of Arizona Medical Center-Diamond Children’s is in the process of implementing a "Painless Poke" program. All nurses and patient care technicians (PCTs) from the Diamond 5 unit (DS) have been trained to use J-Tip™.

Objectives

To reduce pain in pediatric patients during IV cannulations and routine phlebotomy.

To raise awareness and encourage use of various pain reducing methods, including, but not limited to, the use of numbing medications such as J-Tip™ or LMX™.

Methods

Collection of Baseline Data on DS

• Questionnaires were distributed in every patient’s chart on the unit, and nurses and PCTs were asked to complete a questionnaire for every IV cannulation or routine phlebotomy performed.

• The questionnaires collected data on which pain reducing methods were used and the patient’s pain levels as perceived by the nurses and PCTs, using the FLACC (D-10) and FACES (D-5) scales. See Figure 1.

• The FLACC scale consists of five assessment categories for pain in infants: Face, Legs, Activity, Cry, and Consolability. Each category is scaled from 0-2, with 0 indicating absence of pain symptoms.

• Baseline data were collected August 1, 2011—February 12, 2012.

Intervention

An educational module, a PowerPoint® presentation, was presented to the nurses and PCTs at the monthly staff meetings in February 2012, and made available on the hospital's "SharePoint" system, where it was readily viewed.

Signage was posted throughout the DS unit, encouraging the use of numbing medication and other pain reducing methods for IV cannulations. See Figures 2 and 3.

• After the intervention, questionnaire data were collected from March 7, 2012—April 12, 2012.

Statistical Analysis

A chi square test (p<0.05) was used to analyze the use of either J-Tip™ or LMX™ after the intervention.1

A Mann-Whitney U test was used to analyze the ordinal data collected on pain perception, using the SPSS statistical tool.

Results

Use of Pain Reducing Measures

• Figure 4 shows the percentage of change in the use of J-Tip™ and LMX™ before and after the intervention.

• Figure 3 shows the change in median pain scores before and after the intervention.

• Table 1 shows the percentage of change in use of J-Tip™ and LMX™.

• Table 2 shows the percentage of change in use of J-Tip™ and LMX™.

Conclusions and Implications

There was a statistically significant increase in the use of J-Tip™ for IV cannulations and routine phlebotomy on the Diamond 5 unit following the educational intervention. The use of LMX™ remained the same.

A statistically significant decrease in pain scores as evaluated by the nurses and PCTs using both the FLACC and FACES scales also occurred.

The data supports the use of J-Tip™ for IV cannulations and routine phlebotomy in pediatric patients on DS to reduce pain.

Limitations

• The outcome data on pain perception is a subjective measure. Each nurse and PCT may perceive pain differently, affecting the way he or she completes the pain scales.

• The number of nurses and PCTs who attended the educational sessions was low, limiting opportunities to ask questions. More face to face interaction with the intervention team might have strengthened the effect of the intervention.

• The pre-intervention period was conducted over several months, while the post-intervention period lasted only 36 days. The significant differences seen may have been enhanced due to the presence of a larger number of nurses.

Future Considerations

• Further educational modules will be implemented regarding use of J-Tip™ on all pediatric units to increase the familiarity and comfort level among nurses.

• Hospital staff in all pediatric units should be made aware of the potential efficacy and practicality of using J-Tip™.

• To minimize subjectivity in evaluating pain scores, future studies should use a designated person to assign a pain score for all cannulations.

• Further studies should include a larger sample size.

References

For more information, please contact:
Allison Arterbury: arterbury@pharmacy.arizona.edu
James Go: gogobile@pharmacy.arizona.edu
Kevin Tran: trank@pharmacy.arizona.edu
Rachel Cramton: cramtonr@pharmacy.arizona.edu
Lisa So: sosalo@pharmacy.arizona.edu
Hillary Franke: hfranke@peds.arizona.edu
Use of Pain Reducing Measures

- Figure 4 shows the percentage of change in the use of J-Tip® and LMX™ before and after the intervention.

![Graph showing percent of pain reducing methods used pre and post intervention]

*Pokey Says:*

- Let's work together to make sure UAMC is a PAIN FREE place for kids!
- Remember numbing medicine and other pain reducing techniques when doing an IV poke!
- Figure 5 shows the change in median pain scores before and after the intervention.

![Median Pain Scores For IV Cannulations](image)

*FLACC (out of 10)*
- Pre-Int. n=227
- Post-Int. n=35

*FACES (out of 5)*
- Pre-Int. n=129
- Post-Int. n=26

*Figure 5*

*p=0.002, p=0.002 (Mann-Whitney U test)*

![Faces Pain Rating Scale](image)
Teaming up for better health care