



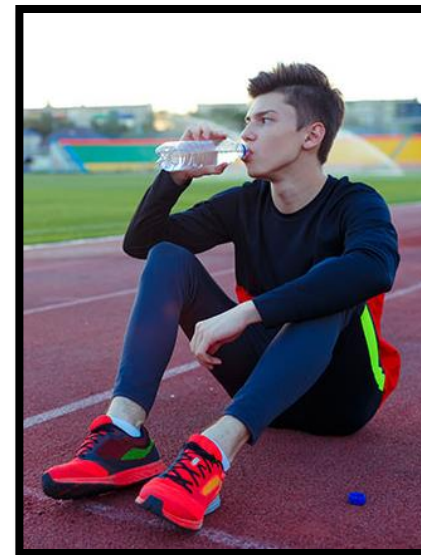
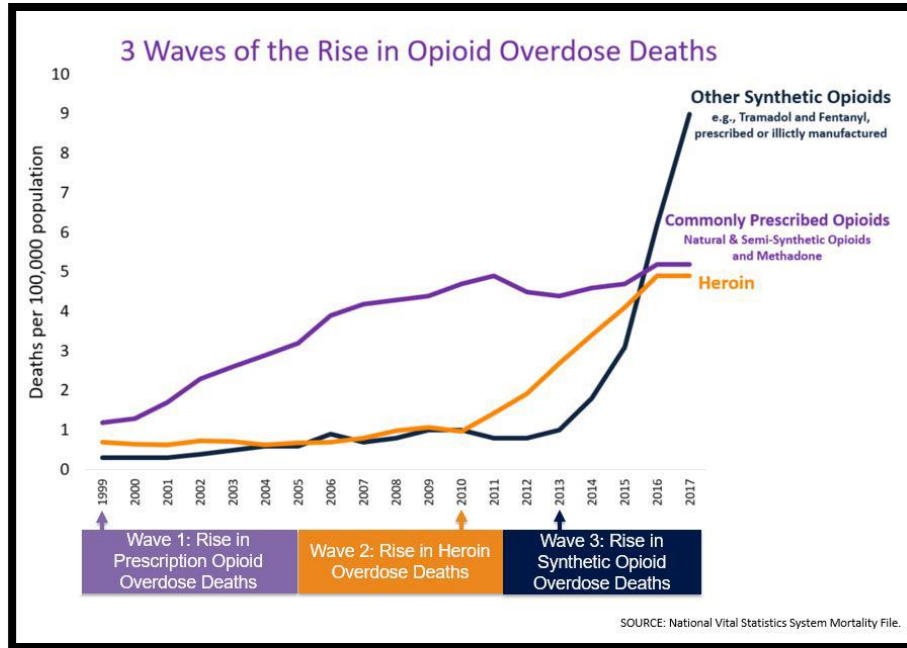
Pediatric Orthopedic Post-operative Pain Management

Kerwyn Jones MD
Laurie Engler MHA



Akron Children's Hospital

National/ Regional Problem



The relentless marketing of pain pills.
Crews from one small Mexican town
selling heroin like pizza. The collision has
led to America's greatest drug scourge.

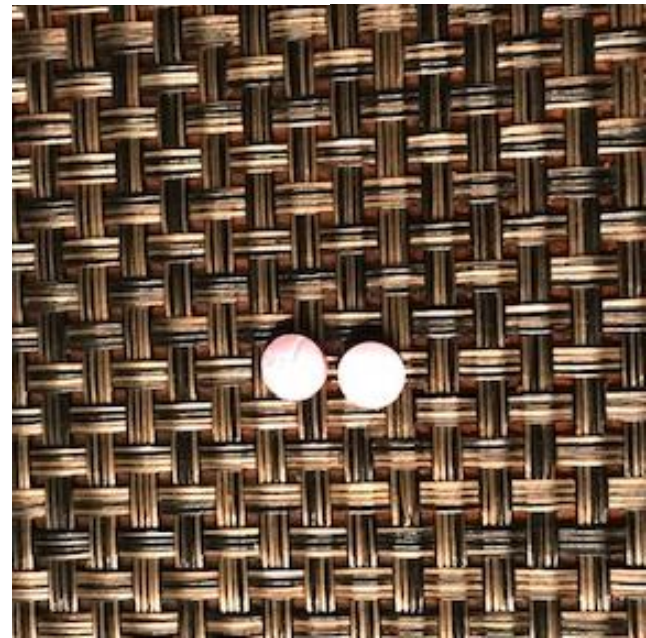
The True Tale of America's Opiate Epidemic

DREAM LAND

SAM QUINONES



Akron Children's Hospital



Local Problem (Circa 2017)

7 rotating
orthopedic
residents/ 9
orthopedic
surgeons

Prescribing
postoperative
narcotics

Wide variation in
opioid
prescriptions



Local Problem 2017

Number of Tablets Prescribed		
Category	Range	Ave
Minor	8:42	20
Moderate	15:30	25
Major	20:30	25

Morphine Milliequivalents (MME)
19,998



Local Problem

Lack of Standardization

- Over/ under prescribing
- Patient confusion
- Staff confusion
- Resident confusion
- **Patient risk**



Multi-disciplinary team

- Informatics
- Order Set team
- Epic Build team
- Orthopedic Physicians
- Orthopedic nurse
- Pain management team
- Pharmacist
- Quality specialist



Design and Implementation

- All orthopedic surgical patients
- Development of standardized guideline
- Test on small scale design and process
 - One provider, one nurse
- Expanded to all orthopedic providers



Pediatric Orthopedic Post-Operative Pain Management KDD

Project Leader(s): Laurie Engler

Interventions (LOR #)

Global Aim

Provide a comprehensive, standard approach to patient perioperative care planning while reducing the amount of opioids prescribed.

SMART Aim

Increase the percentage of time the post-operative pain management guidelines are appropriately followed at discharge from 56% to 90% by 6/30/18.

Population

Pediatric Orthopedic Post-operative Patients

Revision Date: 4/4/18

Key Drivers

Culture (Attending /Resident)
Support/Buy In

Accurate Procedure Category
(Complexity of surgery to category)

Provider Knowledge of the Post-operative Pain Management Guidelines

Guidelines Reference Tools Available

Adequate, Effective Amount of Medication Guideline per Category

Attend COSA provider and Resident meetings
Share data and reporting
Establish incentive LOR 1

Establish clear definition of what procedure fits into which category
Determine accuracy of procedure to category by analyzing patient medication usage per procedure per category LOR 1

Educate at Resident Orientation of the existing guidelines
Educate Residents how to use Guidelines
Educate Where to find Guidelines
Assess Resident Procedure and Category understanding
Attend Resident Conferences LOR 1

Provide pocket cards
Place guidelines / posters in resident areas
Provide Phone apps
Place guidelines on ACH intranet LOR 1

Build Epic Order Set
Establish Clinical Decision Support LOR 2

Obtain patient medication usage through patient tracking and interviews
Analyze KSU Research data collection LOR 1



Predicted Pain (Categories)

01



Minor

Ex: Closed reduction, Closed reduction percutaneous pinning, superficial debridement, arthroscopy without implants (chondroplasty, meniscectomy)

02



Moderate

Ex: Open reduction internal fixation, deep debridement, arthroscopy with implants (ACL, labral repair)

03



Major

Ex: Hip osteotomies, long bones osteotomies, multiple procedures

04



Spinal Fusion (Idiopathic/ Neuromuscular)



Guideline Output

Minor

Drug: Hydrocodone-Acetaminophen
(Norco or Hycet)

Duration: 3 days

Moderate

Drug: Oxycodone-Acetaminophen
(Roxicodone or Percocet)

Duration: 5 days

Major

Drug: Oxycodone-Acetaminophen
(Roxicodone or Percocet)

Duration: 5 days

Spinal Fusion

Drug: Oxycodone-Acetaminophen
(Percocet)

Duration: 10 days



Pediatric Orthopedic Post-Operative Home Going Pain Management Guidelines- July 2018
Acetaminophen Derivatives
*****All patients should be prescribed Ibuprofen 10mg/kg/dose PO every 6 hours PRN*****

Type of Procedure & Description	Initial Script Recommended Medication (by weight)	# Days	Maximum Tablets per Script	Maximum Liquid per Script	Second Script Recommended Medication (by weight)	Maximum Tablets per Script	Maximum Liquid per Script
Minor Closed reduction, CRPP, superficial I&D, arthroscopy without implants (chondroplasty, meniscectomy)	<25kg Hydrocodone-acetaminophen (HYCET) solution 2.5-108mg/5ml Dose: 0.1mg/kg/dose PO q6hrs PRN	3	N/A	75ml	None	N/A	None
	25-50kg Hydrocodone-acetaminophen (NORCO) 5-325mg Dose: (1/2) tab PO q6hrs PRN	3	6	N/A	None	N/A	None
	>50kg Hydrocodone-acetaminophen (NORCO) 5-325mg Dose: (1) tab PO q6hrs PRN	3	12	N/A	None	N/A	None
Moderate ORIF, deep I&D, arthroscopy with implants (ACL, labral repair)	<25kg Oxycodone (immediate release) (ROXICODONE) solution Dose: 0.1 mg/kg/dose PO q6hrs PRN	5	N/A	200ml	<25kg Hydrocodone-acetaminophen (HYCET) solution 2.5-108mg/5ml Dose: 0.1mg/kg/dose PO q6hrs PRN	N/A	200ml
	25-50kg Oxycodone –acetaminophen (PERCOCET) tablet 5-325mg Dose: (1/2) tab PO q6hrs PRN	5	10	N/A	25-50kg Hydrocodone-acetaminophen (NORCO) 5-325mg Dose: (1/2) tab PO q6hrs PRN	10	N/A
	>50kg Oxycodone –acetaminophen (PERCOCET) tablet 5-325mg Dose: (1) tab PO q6hrs PRN	5	20	N/A	>50kg Hydrocodone-acetaminophen (NORCO) 5-325mg Dose: (1) tab PO q6hrs PRN	20	N/A

Pediatric Orthopedic Post-Operative Home Going Pain Management Guidelines- July 2018

Acetaminophen Derivatives

**** All patients should be prescribed Ibuprofen 10mg/kg/dose PO every 8 hours PRN ****

Type of Procedure & Description	Initial Script Recommended Medication (by weight)	# Days	Maximum Tablets per Script	Maximum Liquid per Script	Second Script Recommended Medication (by weight)	Maximum Tablets per Script	Maximum Liquid per Script
Major Hip osteotomies, long bones osteotomies, multiple procedures	<u><25kg</u> Oxycodone (immediate release) (ROXICODONE) solution Dose: 0.2 mg/kg/dose PO q6hrs PRN	5	N/A	300ml	<u><25kg</u> Hydrocodone-acetaminophen (HYCET) solution 2.5-108mg/5ml Dose: 0.1mg/kg/dose PO q6hrs PRN	N/A	300ml
	<u>25-50kg</u> Oxycodone –acetaminophen (PERCO CET) tablet 5-325mg Dose: (1) tabs q6hrs PRN	5	20	N/A	<u>25-50kg</u> Hydrocodone-acetaminophen (NORCO) 5-325mg Dose: (1/2) tab PO q6hrs PRN	10	N/A
	<u>Major >50kg</u> Oxycodone –acetaminophen (PERCO CET) tablet 5-325mg Dose: (1&1/2) tabs q6hrs PRN	5	30	N/A	<u>Major >50kg</u> Hydrocodone-acetaminophen (NORCO) 5-325mg Dose: (1) tab PO q6hrs PRN	20	N/A
Spinal Fusion (AIS / NM)	<u>25-50kg</u> Oxycodone –acetaminophen (PERCO CET) tablet 5-325mg Dose: (1) tab q6hrs PRN	10	40	N/A	N/A	N/A	N/A
	<u>50-70kg</u> Oxycodone –acetaminophen (PERCO CET) tablet 5-325mg Dose: 1 tab q6hrs PRN pain. If pain relief inadequate, may take additional ½ tab q6hrs PRN	10	45	NA	N/A	N/A	N/A
	<u>>70kg</u> OXYcodone –acetaminophen (PERCO CET) tablet 5-325mg Dose: 1 tab q6hrs PRN pain. If pain relief inadequate, may take	10	45	NA	N/A	N/A	N/A



Pediatric Orthopedic Post-Operative Home Going Pain Management Guidelines- July 2018

Acetaminophen Derivatives

	additional 1 tab q6hrs PRN						
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Instructions for Using the Pediatric Orthopedic Post-Operative Home Going Pain Management Guidelines

- Ask these 4 questions for every patient:
 1. Did the patient have a Mild, Moderate, Major procedure or Spinal Fusion?
 2. Does the patient prefer pill or liquid medicine?
 3. What is the patient weight?
 4. Is this the first or second prescription?
- Instruct patient to alternate Narcotic pain medications with Ibuprofen.
 - Ibuprofen 10 mg/kg/dose PO q8hours prn (max. dose should be no more than 600mg)
- Patients should be advised to avoid acetaminophen when utilizing narcotics containing acetaminophen.
 - **Note that the Maximum Tablets per Script does not always add up to the total possible tablets possible for a given recommendation**
(ex: 1 tablet q 6° for 5 days would require a script for 20 tablets if the maximum dose was prescribed)

Order Set Instructions and Documentation

- Use the “SUR Discharge Orders (discharge from floor)” and “SUR Discharge Orders (discharge from PACU)” order sets to order pain medications through the “Ortho Post-Op Pain Medications” section. There are 4 panels of medications (Minor, Moderate, Major, and Spinal Fusion) with the medications from this guideline as well as patient instructions about narcotics that will populate the patient’s AVS when selected to ensure appropriate documentation. Some of the major procedure and spinal fusion medications will be more than 30 morphine equivalent dose per day and spinal fusion medications are more than a 5 day supply and must have appropriate documentation.

Developed by: Kerwyn C. Jones, MD; Todd F. Ritzman, MD; Kenneth T. Bono MD; Samantha Gunkelman, MD; Carl Roose, R.Ph; Laurie Engler, MHA & April Love, BSN, RN Reviewed: June 2018 Order Set Committee Review: July 2018

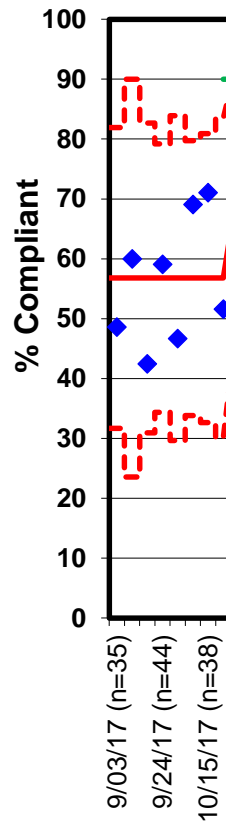
Postoperative Time Out

(End of surgical procedure)

1. Weight bearing status
2. Dressing change
3. Follow up date
- 4. Pain category**
 - Minor
 - Moderate
 - Major
 - Spinal fusion



Percentage of Compliance with Appropriate Guidelines



Weeks

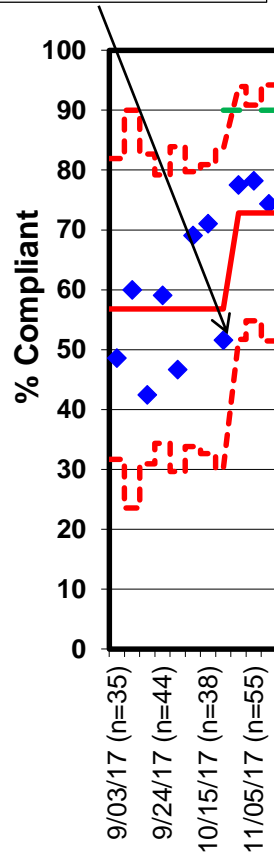
◆ Weekly Compliance Data Points — Average Proportion of Compliance - - - Control Limits



Akron Children's Hospital

New Guidelines on Pocket Cards 10/23/17

Percentage of Compliance with Appropriate Guidelines



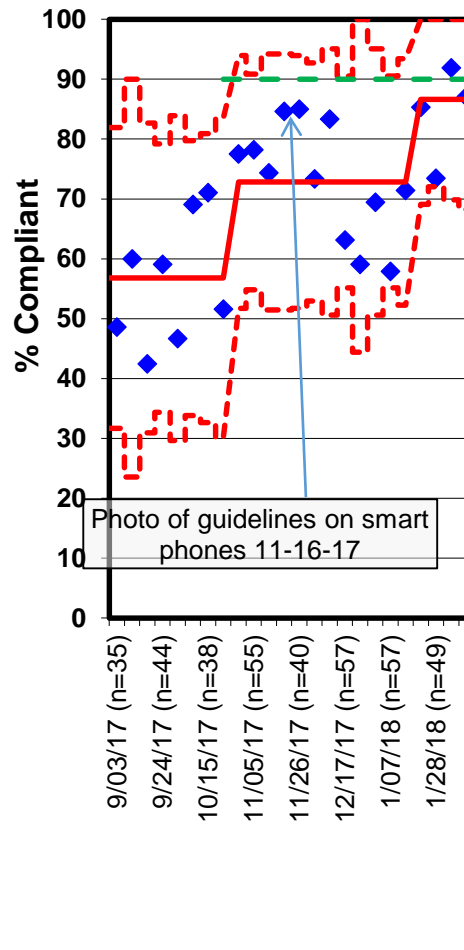
Weeks

◆ Weekly Compliance Data Points — Average Proportion of Compliance - - - Control Limits



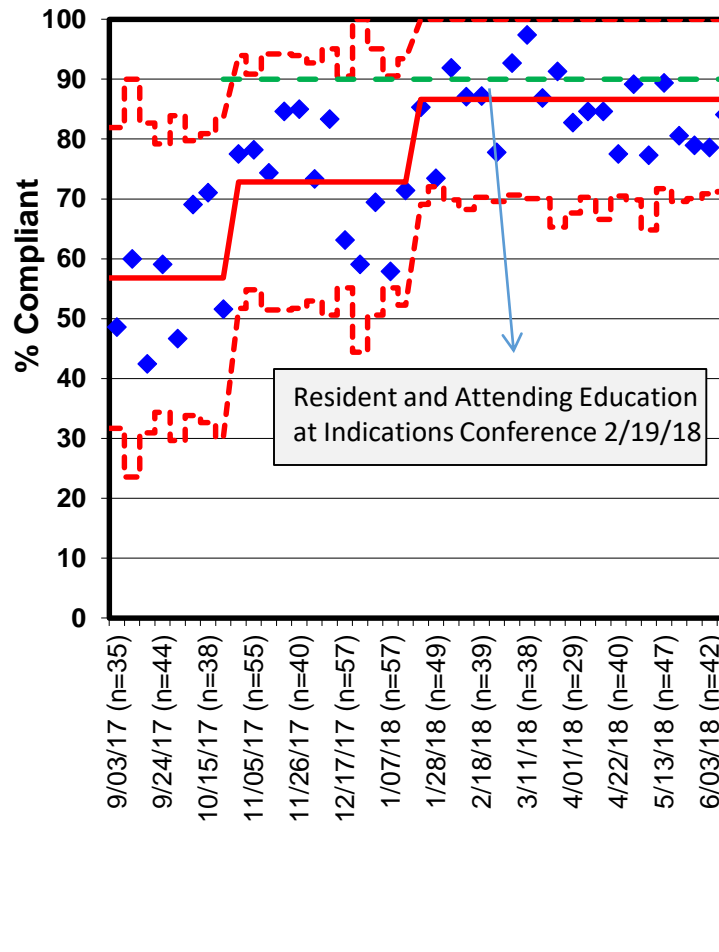
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Percentage of Compliance with Appropriate Guidelines



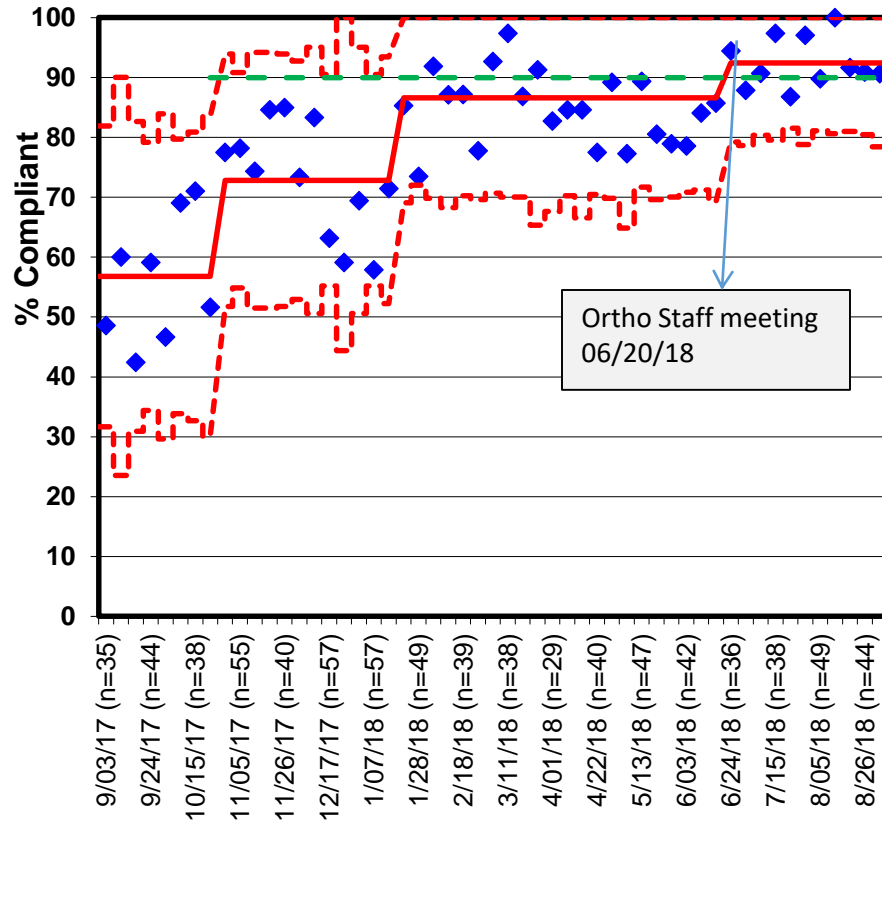
◆ Weekly Compliance Data Points — Average Proportion of Compliance - - - Control Limits

Percentage of Compliance with Appropriate Guidelines



◆ Weekly Compliance Data Points — Average Proportion of Compliance - - - Control Limits

Percentage of Compliance with Appropriate Guidelines



◆ Weekly Compliance Data Points — Average Proportion of Compliance - - - Control Limits

EMR Order Set

- ▶ Ortho Post-OP Pain Medications [Click for more](#)
- ▶ Discharge Referrals [Click for more](#)
- ▶ ENFit Syringes [Click for more](#)
- ▼ Labs & Imaging
- ▶ Labs/Imaging [Click for more](#)



EMR Order Set

▼ Ortho Post-OP Pain Medications

- If prescribing more than a 5 day supply, must document in the medical record why you are making an exception
- If prescribing more than 30 Morphine Equivalent Doses, must document in the medical record why you are making an exception

- Reference link: [Pediatric Orthopedic Post-Operative Pain Management Guideline](#)

- Minor Procedure
- Moderate Procedure
- Major Procedure
- Spinal Fusion



EMR Order Set

oxyCODONE-acetaminophen (PERCOCET) 5-325 MG tablet (25-50kg)
Oral, Disp-10 Tab, R-0

oxyCODONE-acetaminophen (PERCOCET) 5-325 MG tablet (>50kg)
Oral, Disp-20 Tab, R-0

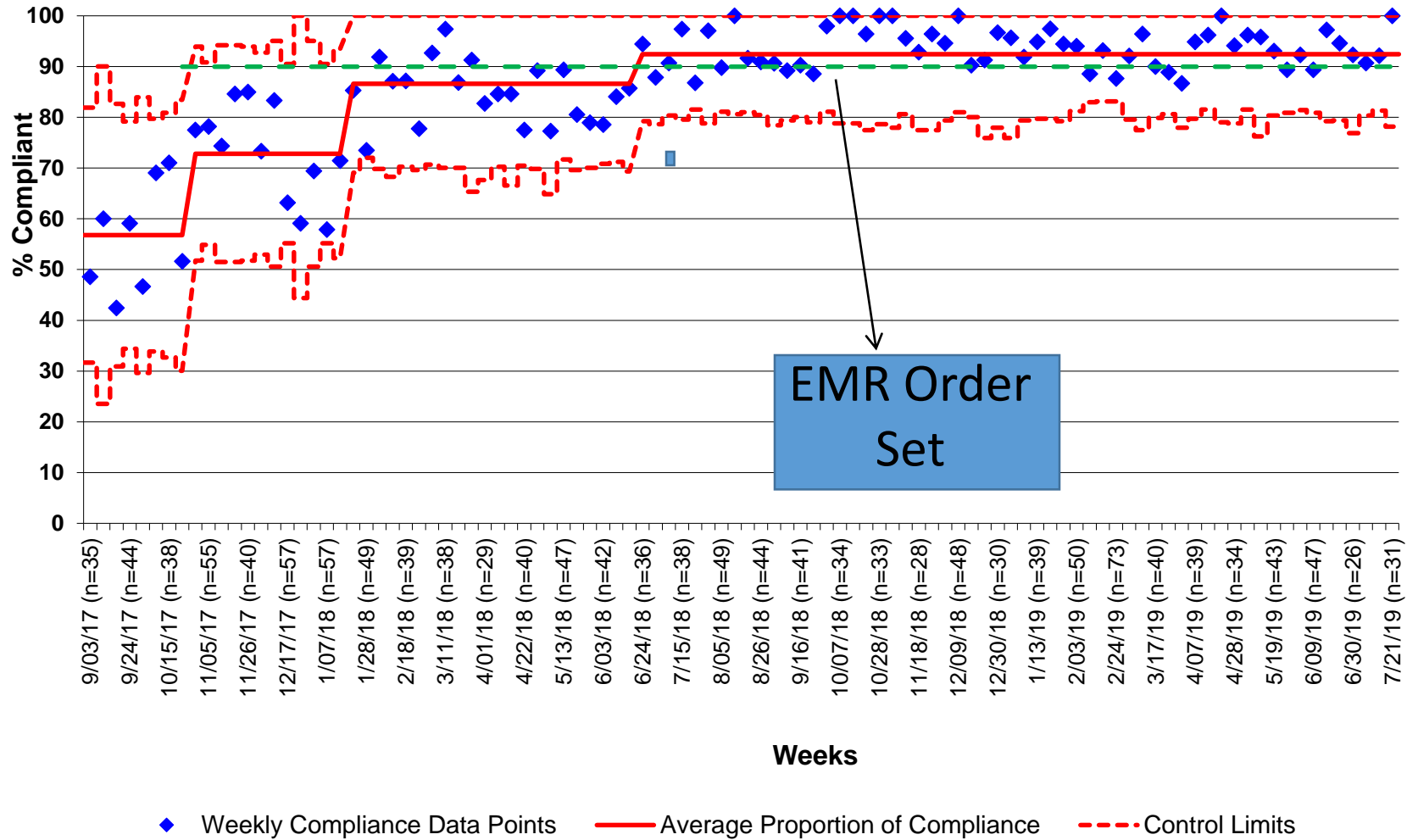
ibuprofen (MOTRIN) 200 MG tablet
Oral, R-0

ibuprofen (ADVIL; MOTRIN) 100 MG/5ML suspension
Oral, R-0

The patient and/or minor's parent/guardian was advised of the benefits and risk of narcotic pain medication use, including the potential for addiction. Narcotic pain medication is addictive by nature and should be used sparingly. Once the patient is no longer experiencing pain requiring narcotics; the use of narcotic pain medication should be discontinued. Do not use acetaminophen (Tylenol) while using narcotics containing acetaminophen.
Routine, Clinic Performed



Percentage of Compliance with Appropriate Guidelines

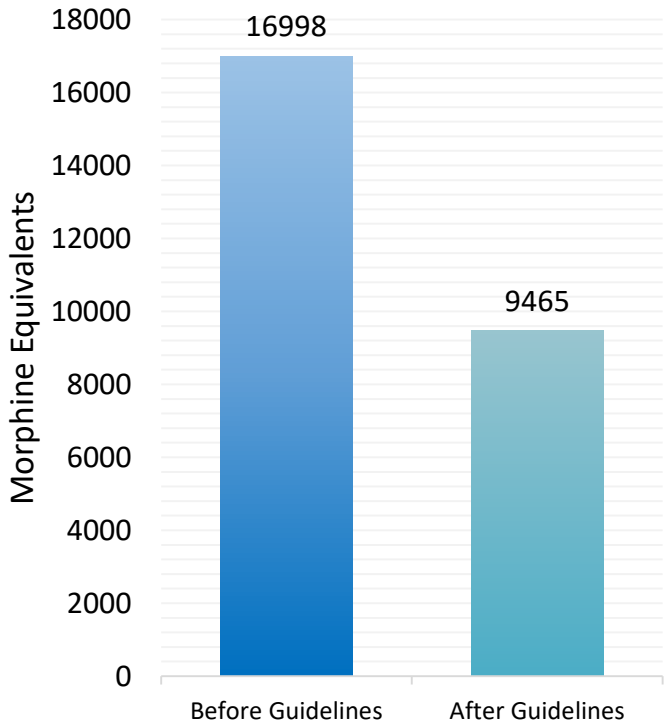


Post- Order Set Implementation

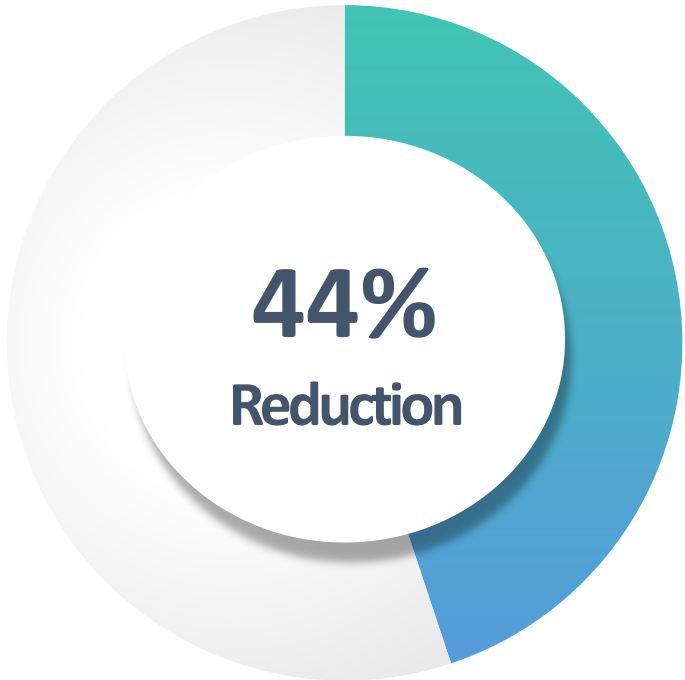
Provide a comprehensive, standard approach to patient perioperative care planning while reducing the amount of opioids prescribed.



MME MORPHINE EQUIVALENTS



1 year random sample



$p < 0.05$



Balancing Metric

Secondary prescriptions

EMR opioid medication orders within 14 days of discharge in the ED and Office in the same 100 patient random sample were reviewed to analyze our balancing measure.

Before guidelines:

- 5/100 obtained a refill

After guidelines:

- 10/100 obtained a refill*



Balancing Metric

Secondary prescriptions

Analysis of refills:

- 2/10 Original prescription were prescribed below the recommended guideline
 - One by type of medication and one by type of category (amount)
- 8/10 guidelines were followed appropriately
 - Including 1 MVA not related to surgery and original prescription
- 3/10 guidelines were appropriately prescribed spine cases



\$ Savings to Society \$

\$242,370



Shared Organizational Order Sets and Clinical Pathways

The screenshot displays the myKidsnet website interface. At the top, there is a blue navigation bar with the Akron Children's Hospital logo and the text 'myKidsnet'. A search bar is located on the right side of the header. Below the navigation bar, a blue menu contains links for HOME, ABOUT US, DEPARTMENTS, HR, POLICIES, and RESOURCES, along with an orange 'APPS' button. The main content area features a sidebar on the left with a list of clinical categories such as Airway Clearance Guidelines, Antimicrobial Stewardship Program, Asthma, Bacterial Meningitis Guidelines, Bone Health, Bronchiolitis Guidelines, Burn Center, Community Acquired Pneumonia (CAP), Deep Space Neck Infection Guidelines, and Diabetes. The main content area is titled 'Inpatient Order Sets and Clinical Pathways' with a date of 1/2/2018. The page content includes an introduction to the website's purpose, a list of experts/owners, and a closing signature from 'The Order Set Committee'.

NEWSTEED One!

Akron Children's Hospital myKidsnet

Search this site

HOME / ABOUT US / DEPARTMENTS / HR / POLICIES / RESOURCES APPS

Airway Clearance Guidelines
Antimicrobial Stewardship Program
Asthma
Bacterial Meningitis Guidelines
Bone Health
Bronchiolitis Guidelines
Burn Center
Community Acquired Pneumonia (CAP)
Deep Space Neck Infection Guidelines
Diabetes

Inpatient Order Sets and Clinical Pathways

1/2/2018

Inpatient Order Sets

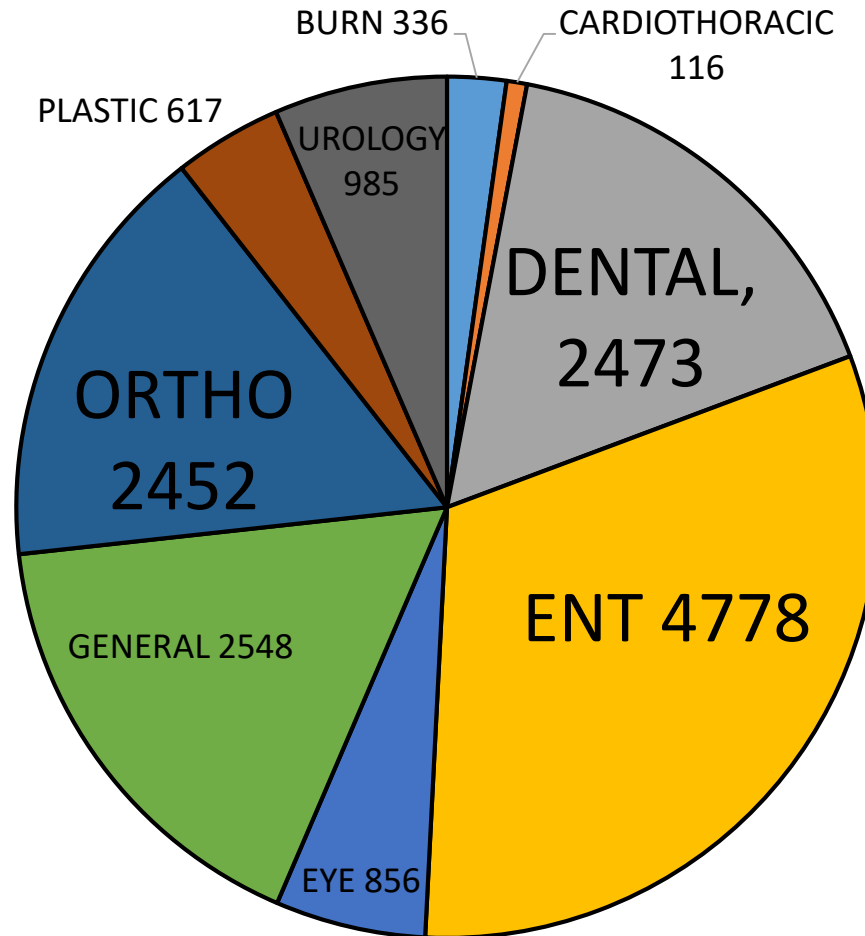
This website is designed to help you get started creating new order sets or proposing changes to a current order set. Additionally, there is an Order Set Committee available to help guide you through the development process. Please contact April M. Love BSN, RN, Clinical Care Standardization Specialist (alove@akronchildrens.org) when beginning the order set process for additional resources and materials.

The Order Set Committee, chartered through Medical Performance Improvement, is responsible for managing all aspects of the order set cycle from inception to annual review. The team will advise content experts/owners on order sets through a defined process that will result in order sets that standardize care delivery. Orders will be based on evidence, where evidence exists, and will aim to create the best, desirable outcomes for our patients. Order sets will be reviewed every three years for new best practice evidence and monitored regularly for usability. We will work to reduce variation in the care delivery process to create safe, effective, timely, efficient, patient centered and equitable care.

Thank you,
The Order Set Committee

Spread within Institution

2018 Akron Children's Hospital Surgical Cases (All Campuses)



Home Going Pain Management Guidelines

All Surgical Specialties



Spread Nationally

The screenshot shows the POSNA website's 'Physician Education' section for the QSVI initiative. The main heading is 'QSVI: Quality, Safety and Value Initiative'. Below it, there are tabs for 'Overview', 'Tools', 'Research', and 'Education'. Under the 'Tools' tab, a list of resources is provided, with 'Post-Op Opioid Prescription Guidelines' circled in red. To the right, there are sections for 'RELATED LINKS' and 'QSVI RESOURCES'.

POSNA
PEDIATRIC ORTHOPAEDIC SOCIETY
OF NORTH AMERICA

JOIN | DONATE | ORTHOKIDS.ORG | CONTACT US | WELCOME, KERWYN!

SEARCH

Our Society | Annual Meeting | **Physician Education** | Research & Publications | Career Resources | Members | Patient Education

IPOS | Event Calendar | **QSVI** | POSNAcademy | Study Guide | The Resident Review | Position Statements | Children's Orthopedics in Underserved Regions (COUR)

Home > Physician Education > QSVI

PHYSICIAN EDUCATION

QSVI: Quality, Safety and Value Initiative

> View All QSVI Updates

Overview | **Tools** | Research | Education

Quality Tools

The QSVI Committee has created toolkits and guidelines for your use

- Pulseless SCH Flowchart
- ACL Return to Play Toolkit
- **Post-Op Opioid Prescription Guidelines**

RELATED LINKS

- > QSVI Library
- > Evidence Based Ortho
- > QSVI Videos
- > QSVI Project Database

QSVI RESOURCES

- > QSVI Challenge 2018/19
- > News Archives
- > QSVI Videos
- > QSVI Library



THANK YOU!

