Pain Management in Pediatric Postsurgical Patients at Mulago Hospital

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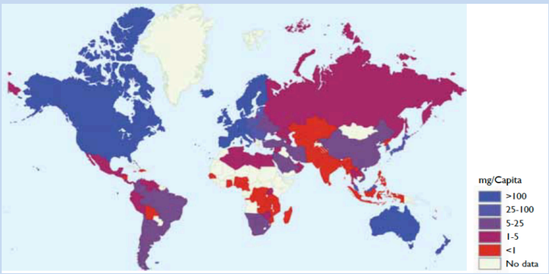
GLOBAL HEALTH

PATHWAYS TO DISCOVERY

Introduction:

- In low and middle-income countries (LMICs), the burden of surgical disease exceeds that of HIV/AIDS, tuberculosis, and malaria combined.[4]
- Acute pain after surgery is nearly universal, and has a profound impact on patient well-being.[1]
- The consequences of poorly-controlled pain include increased risk of:[1]
  - Deep vein thrombosis and pulmonary embolism
  - Myocardial infarction
  - Pneumonia
  - Delayed wound healing
  - Increased length of stay in hospital
- Underassessment and undertreatment of pain are common in LMICs.[2] 5.5 billion people (83% of the world's population) live in countries with low to nonexistent access to opioids. 15% of the world's population consumes 94% of the world's opioids.[5]
- Pain in children is often disproportionately neglected due to misconceptions about nociception in childhood, lack of effective communication, and fear of addiction.[3,6]

Global Consumption of Morphine Equivalents



Pain & Policy Studies Group. Opioid consumption maps—Morphine equivalence (ME), mg/capita, 2014

References:

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5. Verghese ST, Hannallah RS. Acute Pain Management in Children. J Pain Res. 2010; 3: 105–123
6. Seya, et al. "A first comparison between the consumption of and the need for opioid analgesics at country, regional, and global levels" J Pain Palliat Care Pharmacother. 2011;25(1):6-18.

Objective:

- Mulago Hospital is a national referral center in Kampala, Uganda, with an active pediatric surgical service. There is currently no documentation of the status of pain management on the pediatric surgical ward.
- The goal of this project is to assess feasibility of characterizing the current state of pain management

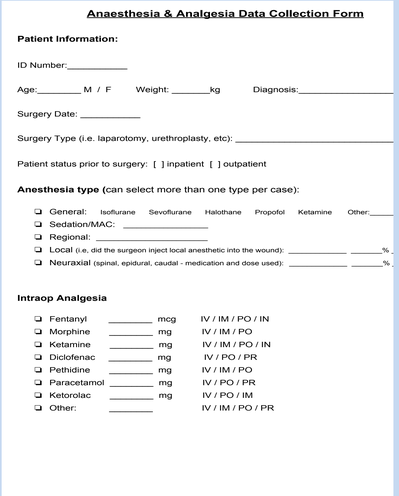
Observations:

- Literature review and anecdotal reports/interviews identified substantial barriers to adequate pain control, including: medication availability, overburdened nursing staff, inadequate knowledge of drug dosing and frequency, inadequate pain assessment, and fear of addiction.
- Many LMICs have restrictive laws against the use of opioids based on fear of misuse and addiction. Ugandan hospitals, in contrast, typically have reliable access to oral morphine as a result of strong advocacy in the field of palliative care.
- Documentation of intraoperative anesthetic and analgesic medication administration is excellent. Medications and dosages are recorded on a paper record, allowing for the possibility of retrospective data collection.
- The Department of Surgery at Yale University has developed a database collecting pediatric surgical data at Mulago Hospital, into which anesthetic data can be integrated.
- Potential limitations include:
  - Limited use of objective pain scales (FLACC, FPS, NRS). Pain scores not recorded in chart.
  - Inconsistent documentation of postoperative analgesic medication administration
  - Low fidelity between analgesics prescribed and those documented as given by nursing staff. It is unclear whether this represents lack of administration, lack of documentation, or both.
  - Parents are frequently responsible for administering self-purchased pain medications, complicating documentation practices.
  - Inherent risk of unintended consequences when encouraging pain control in a setting with limited monitoring capabilities.

	WHO Essential Medication	Available on Ward	Cost to Purchase at Pharmacy
Morphine (oral)	X	X	n/a
Morphine (IV)	X		n/a
Acetaminophen (rectal)	X	X	500 mg x 100 pills 5 USD
Ketamine	X		n/a
Ibuprofen	X		400 mg x 60 pills 3.86 USD

"WHO Model List of Essential Medicines." *World Health Organization*. April 2015.

Development of Anesthesia and Analgesia Database:



Anaesthesia & Analgesia Data Collection Form

Patient Information:

ID Number:_____

Age:_____ M / F Weight: _____kg Diagnosis:_____

Surgery Date: _____

Surgery Type (i.e. laparotomy, urethroplasty, etc): _____

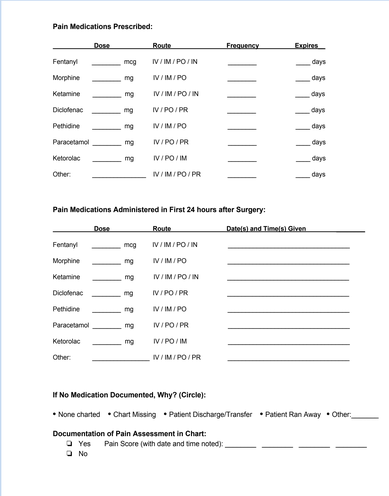
Patient status prior to surgery: [ ] inpatient [ ] outpatient

Anesthesia type (can select more than one type per case):

- ❑ General: Isoflurane Sevoflurane Halothane Propofol Ketamine Other:_____
- ❑ Sedation/MAC: _____
- ❑ Regional: _____
- ❑ Local (i.e. did the surgeon inject local anesthetic into the wound): _____ _____%
- ❑ Neuraxial (spinal, epidural, caudal - medication and dose used): _____ _____%

Intraop Analgesia

❑ Fentanyl	_____ mcg	IV / IM / PO / IN
❑ Morphine	_____ mg	IV / IM / PO
❑ Ketamine	_____ mg	IV / IM / PO / IN
❑ Diclofenac	_____ mg	IV / PO / PR
❑ Pethidine	_____ mg	IV / IM / PO
❑ Paracetamol	_____ mg	IV / PO / PR
❑ Ketorolac	_____ mg	IV / PO / IM
❑ Other:	_____	IV / IM / PO / PR



Pain Medications Prescribed:

	Dose	Route	Frequency	Expires
Fentanyl	_____ mcg	IV / IM / PO / IN	_____	___ days
Morphine	_____ mg	IV / IM / PO	_____	___ days
Ketamine	_____ mg	IV / IM / PO / IN	_____	___ days
Diclofenac	_____ mg	IV / PO / PR	_____	___ days
Pethidine	_____ mg	IV / IM / PO	_____	___ days
Paracetamol	_____ mg	IV / PO / PR	_____	___ days
Ketorolac	_____ mg	IV / PO / IM	_____	___ days
Other:	_____	IV / IM / PO / PR	_____	___ days

Pain Medications Administered in First 24 hours after Surgery:

	Dose	Route	Date(s) and Time(s) Given
Fentanyl	_____ mcg	IV / IM / PO / IN	_____
Morphine	_____ mg	IV / IM / PO	_____
Ketamine	_____ mg	IV / IM / PO / IN	_____
Diclofenac	_____ mg	IV / PO / PR	_____
Pethidine	_____ mg	IV / IM / PO	_____
Paracetamol	_____ mg	IV / PO / PR	_____
Ketorolac	_____ mg	IV / PO / IM	_____
Other:	_____	IV / IM / PO / PR	_____

If No Medication Documented, Why? (Circle):

• None charted • Chart Missing • Patient Discharge/Transfer • Patient Ran Away • Other:_____

Documentation of Pain Assessment in Chart:

❑ Yes Pain Score (with date and time noted): _____ _____ _____ _____
❑ No

Future Directions:

- Obtain IRB approval to pilot Anesthesia and Analgesia Data Collection Form
- Explore qualitative aspects of pain management, including parental and nursing surveys regarding perceptions of pain
- QI initiatives addressing standardization of medication dosages, recognition of opioid overdose, standardized pain assessment scales

ACKNOWLEDGEMENTS

- Department of Anesthesiology, Mulago Hospital, Makerere University
- Dr. Doruk Ozgediz, Department of Surgery, Yale University
- Dr. Phyllis Kisa, Department of Surgery, Mulago Hospital, Makerere University

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