# Unveiling Multimodal Analgesia in Postoperative Pain Management: Bridging the Gap Between Low- and Middle-Income Countries (LMIC) and High-Income Countries (HIC).

Dr Gaston NYIRIGIRA
Anesthesiologist and Pain Specialist
King Faisal Hospital Rwanda

# Overview

- What is multimodal analgesia?
- Why do we need that in post operative period?
- What are the components?
- What are the challenges in LMIC?
- Way forward?
- End

# What is multimodal analgesia?

**Multimodal Analgesia**

**Neuraxial**
Intrathecal
Epidural

**Peripheral Nerve Block**
Peripheral Nerve Blocks
Transversus Abdominis Plane Block
Paravertebral Block

**Local infiltration**
Intra-articular
Incisional

**Systemic**
Acetaminophen; NSAIDS/COX2-Selectiv
Gabapentinoids; Ketamine; Lidocaine;
α2 agonists; Magnesium; Dexamethason
Tramadol; Opioids

| Preop | Periop | Postop |
|---|---|---|
| Surgical Education & Expectation Management | Metabolism Management | Clinical team communication |
| Surgical Site Education | Multimodal Analgesia | Wound care Management |
| Nutrition Optimization | Surgery Checklist | Post acute care resource utilization |
| Diabetes Management | Early Mobilization | |
| Smoking Cessation | Wound care Management | |
| Narcotic/Alcohol use | | |
| Obstructive sleep apnea | | |
| Discharge planning | | |

# Why do we need that?

# ERAS?

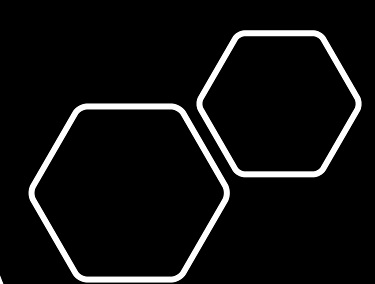
# Conclusion

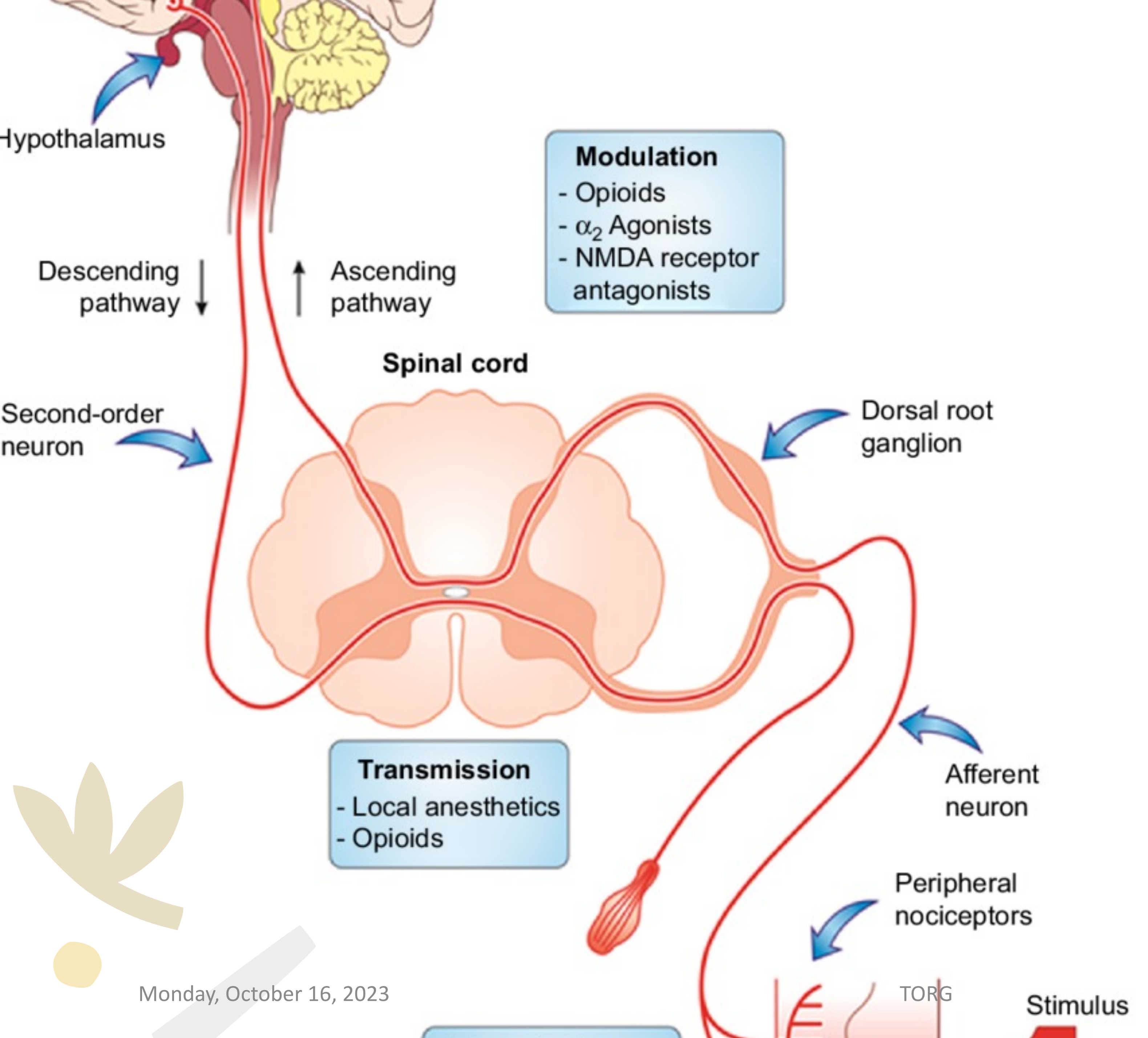
Multimodal Analgesia

**Improved Analgesia**

- Lowered Dose
- Reduced Side Effects
- Early Mobilization
- Early Enteral Feeding
- Rapid Recovery
- low cost

**Aggressive preemtive multimodal including epidural or nerve block not only produce optimal analgesia but also may prevent the occurrence of chronic pain after surgical**






# Pathway and Receptors

# Pain Pathway

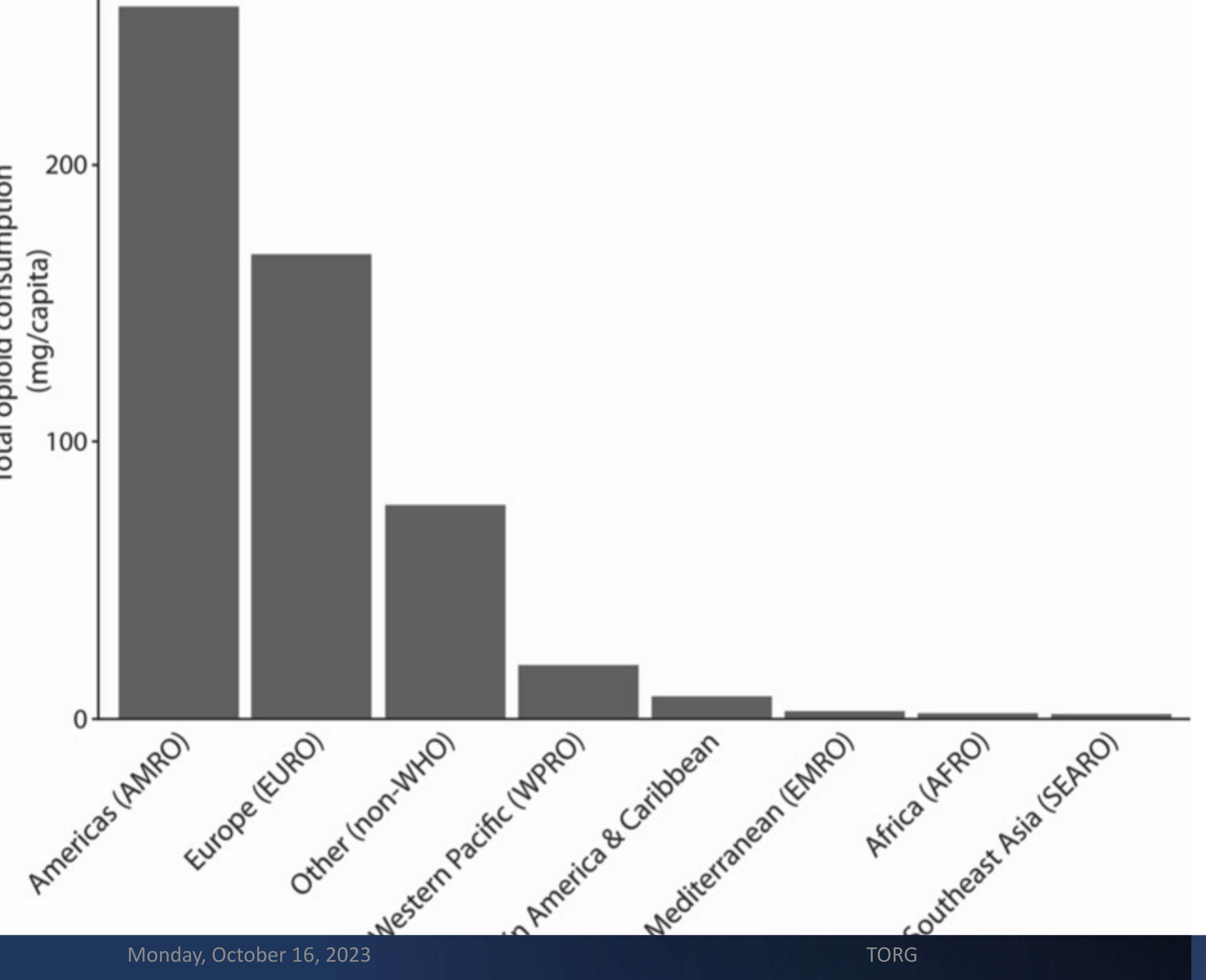
***Processing of Pain:***
- Cognitive-behavioral therapy*
- Patient education*
- Acetaminophen*
- Opioids†, gabapentinoids†, ketamine†

***Transmission of Pain:***
- Regional analgesia*
- Opioids†, gabapentinoids†, ketamine†

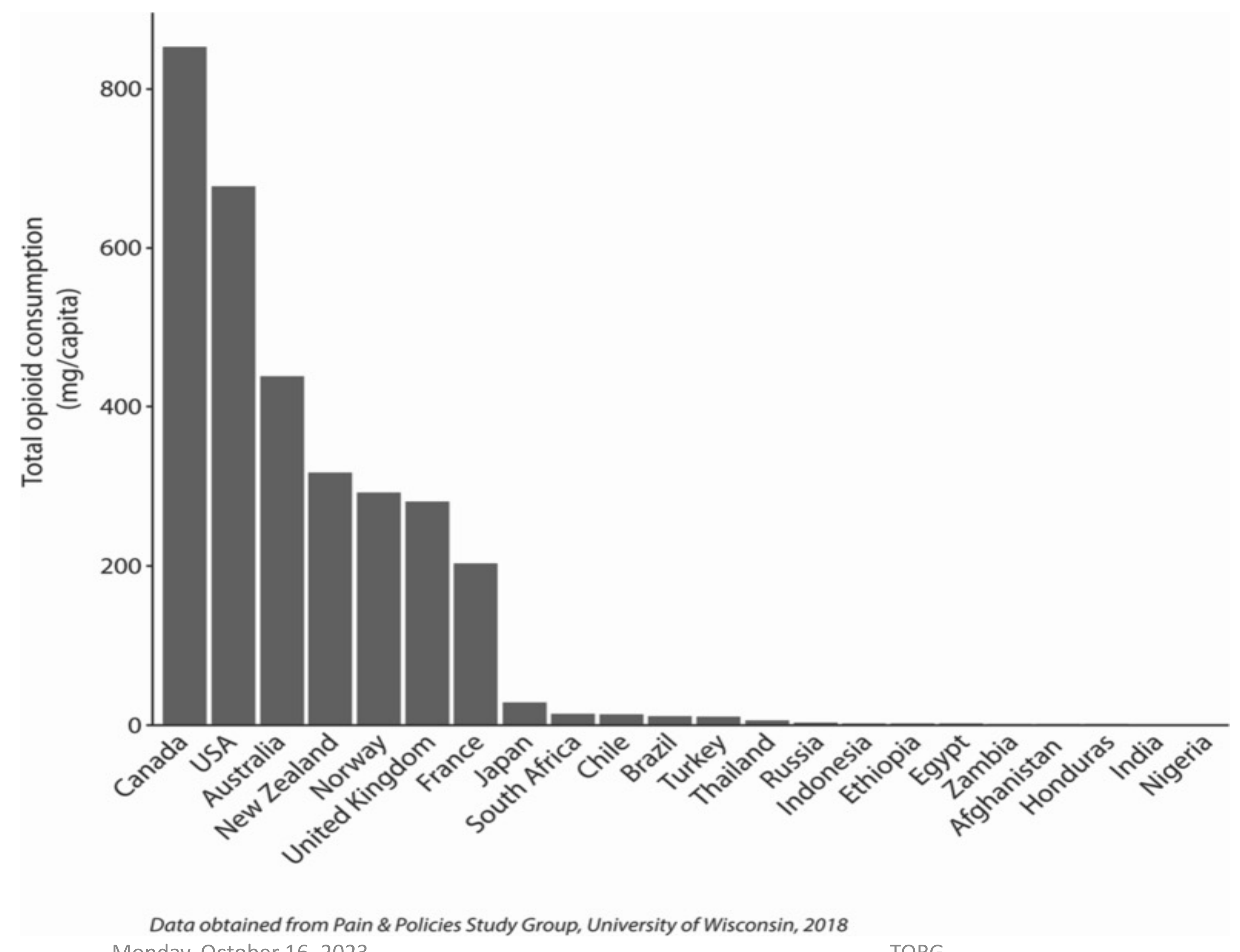
***Source of Pain:***
- Compression*, cryotherapy*
- Local anesthetics*
- Non-steroidal anti-inflammatory drugs*

Joshi, G.P. Rational Multimodal Analgesia for Perioperative Pain Management. *Curr Pain Headache Rep* **27**, 227–237 (2023). https://doi.org/10.1007/s11916-023-01137-y

Paracetamol
NSAIDS
Dexamethasone
LRA
Inflilitration
Heat, Ice compression, distratction, early ambulation, good hydration, physio, mirror thaerpy…




# Challenges in LMIC




# Opioid consumption per country

# Solutions

- Advocacy,
- Improving treatment availability,

. Education

# Experience sharing

# Implementation process of a Pain Program in LMIC

## Experience of Rwanda

Dr Gaston NYIRIGIRA
KFH/ Rwanda

# The NEED for effective pain management program/services

# 2009

| Cz of death | Pain Ttt need |
|---|---|
| Cancer | 441,682 |
| HIV/AIDS | 921,800 |

Only **720 Kg** of opioids/ year was reported by governments across the countries.

For approximately 8.6% of the total number of painful deaths from Cancer or HIV/AIDS.

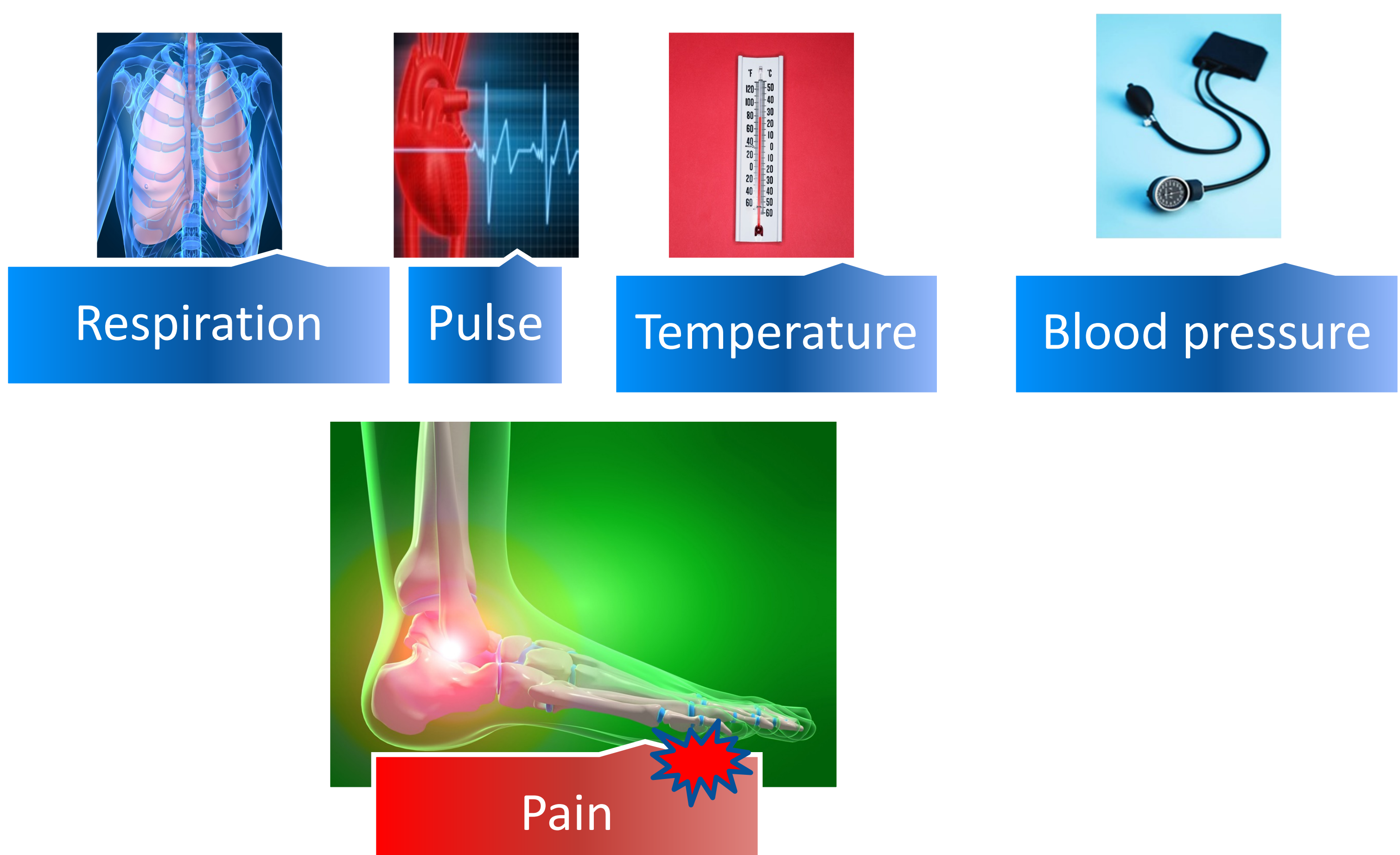
## The need for acute pain service especially Post operative:

- Patient screaming in the wards
- Essential pain medications not available: Who is responsible?
- Increase in Trauma patients rate
- Surgery improvement in numbers…number of surgeries
- C/S number increased

# Rwanda Experience

DISCLOSURE

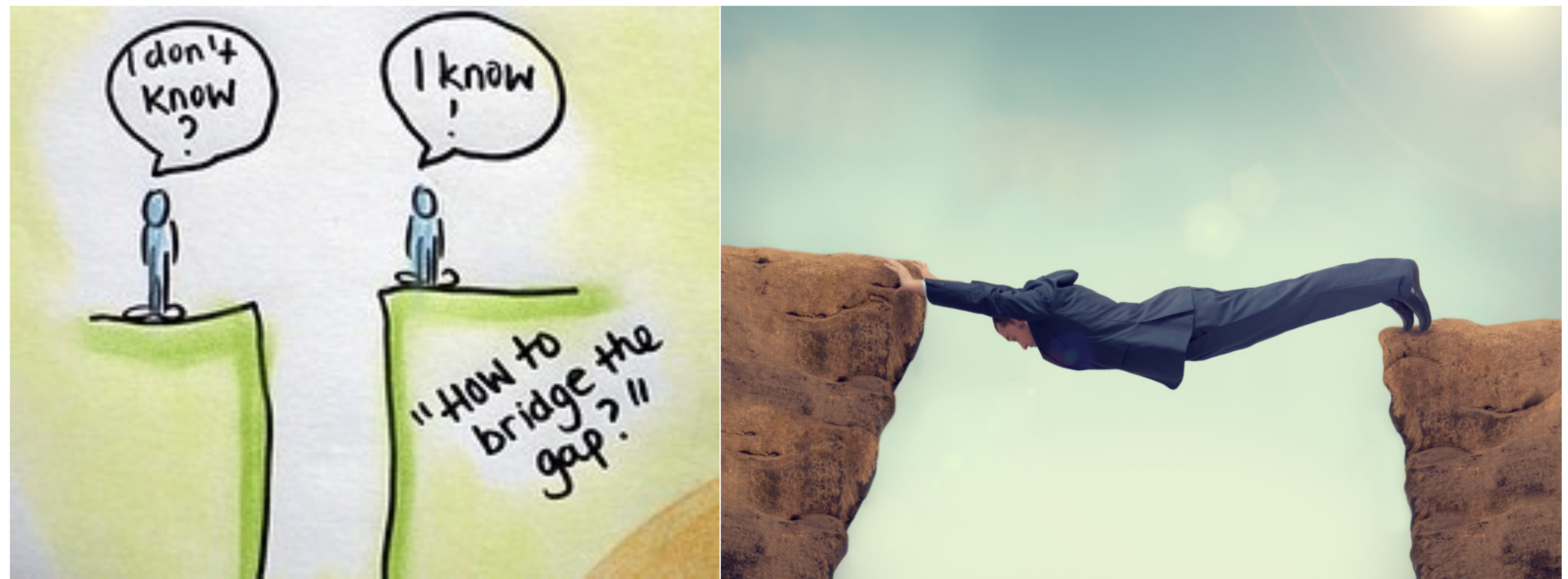
# Pain Is the 5th Vital Sign




Phillips DM. JCAHO pain management standards are unveiled. Joint Commission on Accreditation of Healthcare Organizations. *JAMA* 2000; 284(4):428-9.

# Perspectives, perceptions and experiences in postoperative pain management in developing countries: A focus group study conducted in Rwanda

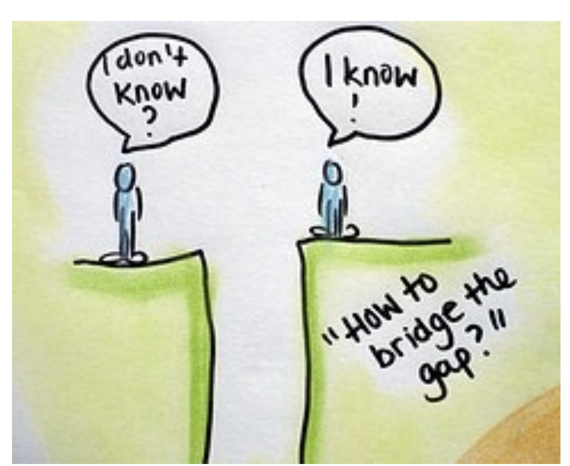
Ana P Johnson PhD[1], Ryan Mahaffey MD FRCPC[2], Rylan Egan PhD[3], Theogene Twagirumugabe MD[4], Joel L Parlow MD FRCPC[2]



# 2015

**Barriers and facilitators to postoperative pain management in Rwanda from the perspective of health care providers: A contextualization of the theory of planned behavior**

Gaston Nyirigira, Rosemary A. Wilson, Elizabeth G. VanDenKerkhof, David H. Goldstein, Theogene Twagirumugabe, Ryan Mahaffey, Joel Parlow & Ana P. Johnson




## System and knowledge barriers

# What should be next?

Training

Advocacy

# Who is going to do this?

Team + Collaborators

# Trainings

Training on EPM

# Trainings,2016

EPM course team

# Trainings

Over **182** multidisciplinary healthcare providers were trained by the end of 2017

and

About **287** (>70%) of all HC providers at CHUB in 2018.

*The number kept increasing*

# On top of trainings

- Pocket cards provided with Pain assessment tools
- Wall posters with important information
- Patient chat revised ( pain documentation,…)
- Appointed unit pain focal points

# Is only training enough?

## Mid 2017

No standard protocol

No guidelines

No policy

No documentation tools

Patient file not helping

*Only information posters, pocket cards as well as assessment tools were available.*

# By December,2017

1.Guidelines
2.Policy and procedure
3.Quality improvement project
4.Documentation tools
5.Standardized Multimodal analgesia order sheet

All approved

PS41
2013

Australian and New Zealand College of Anaesthetists (ANZCA)

Faculty of Pain Medicine

# Guidelines on Acute Pain Management

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**CLINICAL PRACTICES GUIDELINES**

**November 2017**

**Guideline Nº: 045/2017**

## ACUTE PAIN CARE

**Introduction**

Effective acute pain assessment and treatment is a fundamental part of quality patient care and addresses the International Association for the Study of Pain, Declaration of Montreal (2010)[1] that recognises the following human rights:

i. the right of all people to have access to pain management without discrimination
ii. the right of all people in pain to acknowledgment of their pain and to be informed about how it can be assessed and managed
iii. the right of all people with pain to have access to appropriate assessment and treatment of the pain by adequately training health care professionals.

| Dr. Theogene TWAGIRUMUGABE<br>Head of Department, Anaesthesia, Critical Care and Pain | Dr. Augustin SENDEGEYA<br>Director General |
| --- | --- |
| Signature: | Signature: |

CENTRE HOSPITALIER UNIVERSITAIRE DE BUTARE

**Date for review: November 2019**

E-mail : info@chub.rw
Website: www.chub.rw

B.P : 254 BUTARE
Hotline:2030

# IMPORTANT TRAININGS

# Multi-modal and pre-emptive analgesia

Pre-emptive analgesia:

Treatment initiated before and/or during surgical procedure to reduce physiological consequences of nociception.

[Woolf CJ, Chong MS. *Anes Analg* 1993; 77: 362-379]

Multimodal (balanced) analgesia:

Opioids + non-opioids together to reduce opioid-related side effects, improve pain control.

[Kehlet H, Dahl JB. *Anesth Analg* 1993; 77: 1048-56; Beaulieu P. *Can J Anaesth* 2007; 54: 481-5; Tan TY, Schug SA. *Rev Anal* 2006; 9: 45-53.]

# Pre-emptive analgesia

## Paracetamol

- DB-RCT (N=75, ASA I & II: lower extremity sx) IV paracetamol pre-incision
  - Lower VRS, 6h (2.72 ± -1.27 vs. 4.48 ± 1.04, p=0.001); 50% less opioid used in 24h (23 ± 20.3mg vs. 42 ± 15.7mg: p=0.003)

[Khalili G et al. J Clin Anesth 2013; 25: 188-192]

## NSAIDs

- Less opioid required compared to post-op alone: IV or suppository
  - n=6/8 RCTs modest effect in dental, breast, orthopedic and gyne surgery

[ N=80 trials: Dahl JB, Moiniche S. *British Med Bull;* 2005: 13-27.]

  - n=16 RCTs; 875 patients: ES 0.39; 95% CI 0.27-0.48

[Ong C, Lirk P, Seymour R, Jenkins B. Anesth Analg 2005; 100: 757-773]

## Ketamine

- Less opioid required compared to post-op alone
  - n=2/3 RCTs modest effect in 2/3 studies in abdominal and gyne surgery

[N=80 trials: Dahl JB, Moiniche S. *British Med Bull;* 2005: 13-27.]

  - n= 7 RCTs; 418 patients: ES 0.09; 95% CI -0.03-0.22

[Ong C, Lirk P, Seymour R, Jenkins B. Anesth Analg 2005; 100: 757-773]

# Combination analgesics

- **Antalgex T (Medex)**
  - Tramadol 37.5mg Paracetamol 325mg Capsule

- **Paracetamol/ Codeine** combinations
  - Variable doses of paracetamol: 300-500 mg
  - Variable doses of codeine: 8-60mg

Theoretical problems!

- Lack of opioid-sparing effect
- Variable, non-therapeutic doses of paracetamol

# MULTIMODAL ANALGESIA/SURGERY

- SR with meta-analysis: N=60

[Maund E et al., *British J Anaesth* 2011; 106: 292-7.]

  - n= 54 placebo controlled trials: n=12 paracetamol; n=38 non-selective NSAIDs; n=16 COX-2 inhibitors
  - n=2 thoracic, n=23 ortho, n=17 gyne, n=5 obs, n=13 gen surg

- Outcomes

  - **Reduction in morphine consumption (OME) at 24h**
    - Paracetamol 6.34 (95% CI 9.02, 3.65)
    - NSAIDs 10.18 (95% CI 11.65, 8.72)
  - **Decrease in opioid- related side effects (N&V, sedation)**
    - Results not consistent – underpowered trials for detection of reduction in side effects
  - **Adverse effect from non-opioid**
    - NSAID groups 2.4% bleeding vs. 0.4% placebo:

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**Name:** ______________________________ **File N°:** ______________________

## MULTIMODAL ANALGESIA ORDERS (ADULT)

**TRANSCRIPTION & RN NOTES**

1. ***OPIOIDS:***
   ☐ Morphine 2.5-5 mg SC **OR** every 3 hours PRN ☐ Morphine 5-10 mg PO ***OR*** every 3 hours PRN ☐ Tramadol 50 mg PO every 6 hours PRN

2. ***CO-ANALGESICS:*** Give only while patient is awake. **Check Recovery Room last dose before administering where applicable**

   NON-STEROIDAL ANTI-INFLAMMATORY DRUGS ***Caution in patients with bleeding disorders, anticoagulation, kidney disease, peptic ulcer disease, asthma, pre-eclampsia, allergy to ASA or other NSAIDS***

   ☐ Diclofenac 75 mg IM q12 h X 48 hours
   **OR**
   ☐ Diclofenac 50-100 mg PO/PR (where applicable) q8 h X 48 hours
   **OR**
   ☐ Ibuprofen 400 mg PO q6 h X 48 hours

   PARACETAMOL ***Caution in patients with liver disease, allergy to paracetamol, alcoholism, malnutrition or prolonged fasting***

   ☐ Paracetamol suppository 1300 mg PR q8 h X 48 hours
   **OR**
   ☐ Paracetamol 1 g PO/IV q6h X 48 hours

3. ***ANTI-EMETIC THERAPY:***

☐ Metoclopramide 5-10 mg IV q6 h PRN for nausea.

**OR**

☐ Ondansetron 4mg IV q8h PRN for nausea.

4. ***ANTI-PRURITIC THERAPY:***

☐ Naloxone 0.2 mg SC or 0.04mg IV q1 h PRN for pruritus.

☐ Chloropheniramine maleate (Polaramine) 4 mg PO q6h PRN for pruritus.

5. ***OPIOID REVERSAL:*** *(not applicable to ventilated patients)*

If Ramsey sedation score is 5 **OR** respiratory rate is less than 10 breaths/min:

- Call Anesthesiology ASAP/STAT.
- Administer oxygen.
- Have naloxone (0.4 mg/1 mL in 9 mL 0.9% sodium chloride) available and prepare to administer.

6. ***INITIATE PAIN ASSESSMENT PROTOCOL***

Physician Signature/Stamp:

Printed Name:

Date (DD/MM/YYYY) & Time:

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# MEDICATION ADMINISTRATION RECORD (MAR): PRN
## PRN Medications Only

Name: ______________________________ File N°: ______________________________

| Date<br>Medication | ..../...../.....<br>Time/Initial/Dose | ..../...../.....<br>Time/Initial/Dose | ..../...../.....<br>Time/Initial/Dose | ..../...../.....<br>Time/Initial/Dose | ..../...../.....<br>Time/Initial/Dose | ..../...../.....<br>Time/Initial/Dose | ..../...../.....<br>Time/Initial/Dose |
|---|---|---|---|---|---|---|---|
| Date: | | | | | | | |
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| Signature: ______________ | | | | | | | |
| Date: | | | | | | | |
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| Signature: ______________ | | | | | | | |
| Date: | | | | | | | |
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| Signature: ______________ | | | | | | | |

# MEDICATION ADMINISTRATION RECORD (MAR): SCHEDULED

## Scheduled Medications Only

Name: ______________________________ File N°: ______________________

| Medication | Date | ..../..../.... | ..../..../.... | ..../..../.... | ..../..../.... | ..../..../.... | ..../..../.... | ..../..../.... |
|---|---|---|---|---|---|---|---|---|
| | **Schedule** | Time/Init/Dose | Time/Init/Dose | Time/Init/Dose | Time/Init/Dose | Time/Init/Dose | Time/Init/Dose | Time/Init/Dose |
| Date: | 01 02 03 04 05 06 | | | | | | | |
| | 07 08 09 10 11 12 | | | | | | | |
| | 13 14 15 16 17 18 | | | | | | | |
| Signature: _______________ | 19 20 21 22 23 24 | | | | | | | |
| Date: | 01 02 03 04 05 06 | | | | | | | |
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| Signature: _______________ | 19 20 21 22 23 24 | | | | | | | |

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# PAIN MANAGEMENT FLOW SHEET

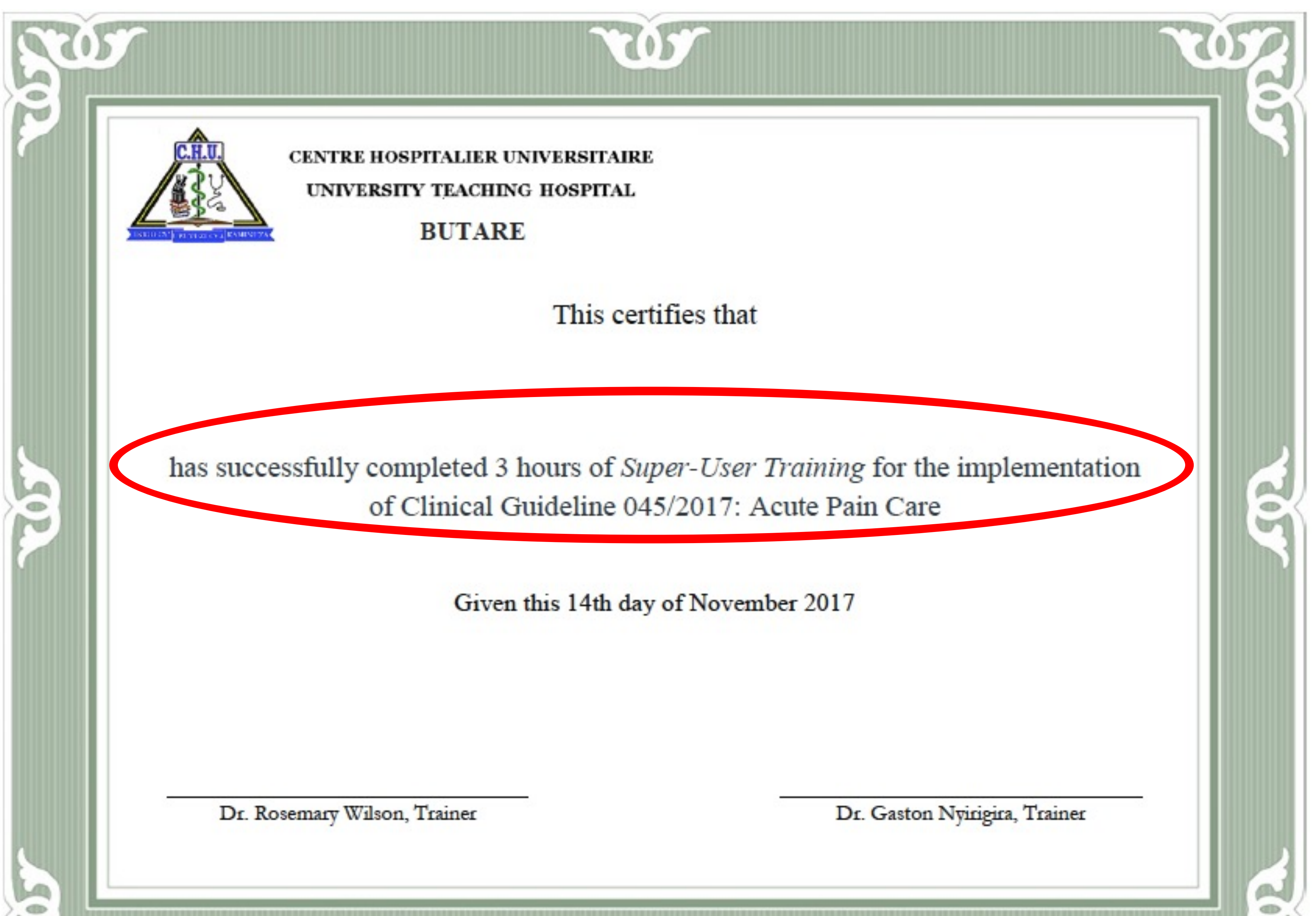
**Name:** ______________________________ **Record Number:** ____________________ **Age:** ________

**Gender:** ____________ **Type of Surgery:** ______________________________________________

| Pain (NRS) | 0 | 1 2 3 | 4 5 6 | 7 8 9 | 10 |
|---|---|---|---|---|---|
| | **No Pain** | Mild Pain | Moderate Pain | Severe Pain | **Worst Pain** |

| Sedation | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| | Awake & Alert | Minimally Sedated | Moderately sedated | Deeply sedated | Unrousable |

| Date (dd.mm.yy) Time (hh:mm) | Rest Pain Intensity (0-10) | Active Pain Intensity (0-10) | Observations<br>*Pain location and quality?*<br>*Able to cough and breathe deeply?*<br>*Up to chair or walking?*<br>*Able to sleep and eat?* | Medication and/or treatment given? (Yes/No) | Effect | | | Sedation Score (0-4) Post-administration | Initials |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Time (hh:mm) | Rest (0-10) | Activity (0-10) | | |
| ....../....../.......<br>.......... : .......... | /10 | /10 | | | | /10 | /10 | /4 | |
| ....../...../........<br>.......... : .......... | /10 | /10 | | | | /10 | /10 | /4 | |
| ....../....../........<br>.......... : .......... | /10 | /10 | | | | /10 | /10 | /4 | |
| ....../....../........<br>.......... : .......... | /10 | /10 | | | | /10 | /10 | /4 | |


C.H.U.
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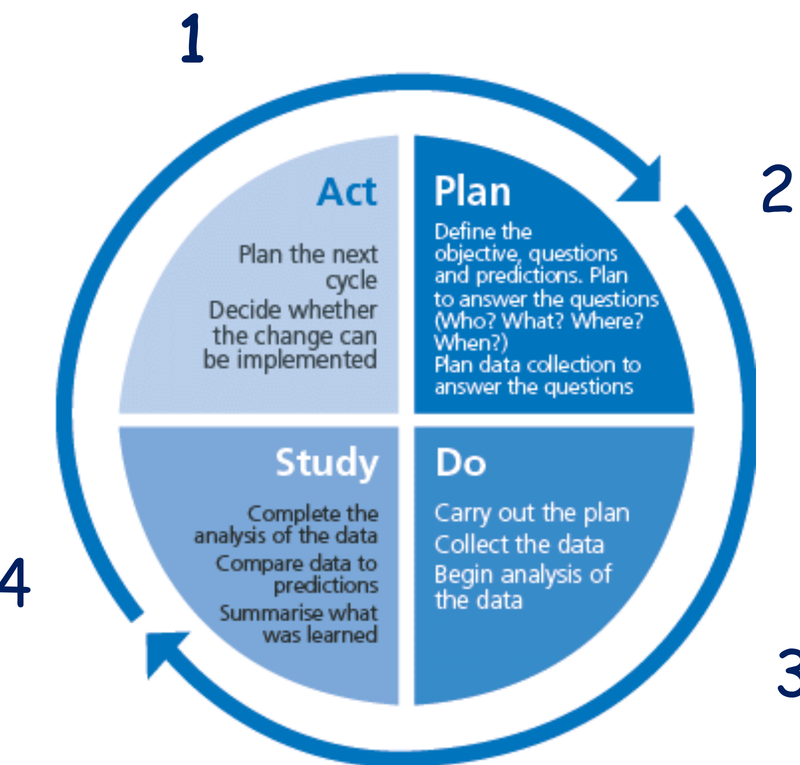
BUTARE
This certifies that
has successfully completed 3 hours of Super-User Training for the implementation
of Clinical Guideline 045/2017: Acute Pain Care
Given this 14th day of November 2017
Dr. Rosemary Wilson, Trainer
Dr. Gaston Nyirigira, Trainer

# Sustainability,2017

QI training

# PDSA



1. Tool completion

2. Pain Assessment, Medication, and Schedule Conformance

3. Dosage conformance

# Pain Management Chart Audit Tool

**Patient Name: ________________________________________________________**

**Type of Surgery: ________________________________________**

**Department: _________________________    Ward: _________________________**

**Auditor Name: _________________________________________________________**

**Today's Date: (dd mm yyyy)    Date of Surgery: (dd mm yyyy)**

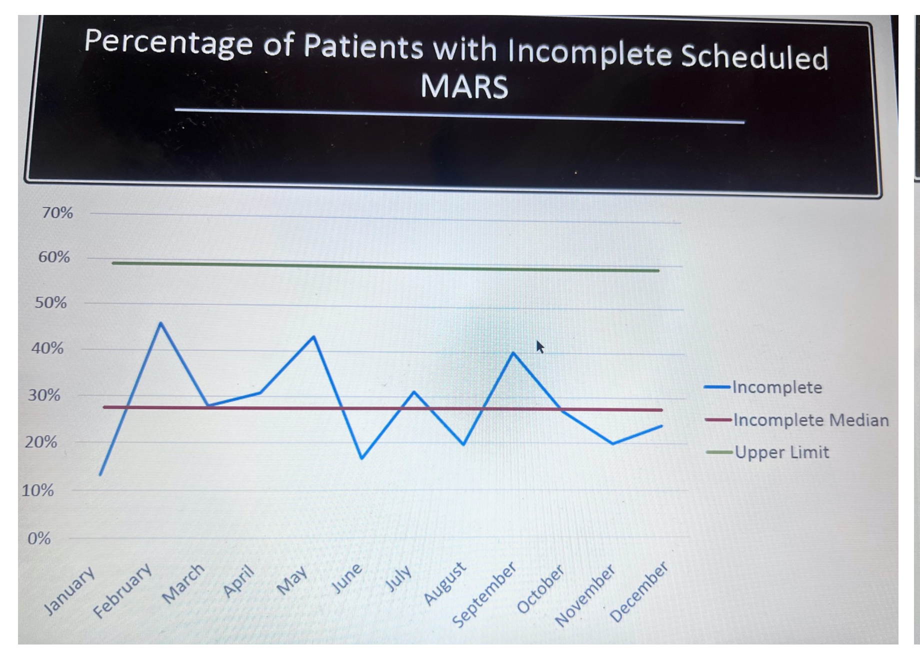
______ _____ ________    ______ _____ ________

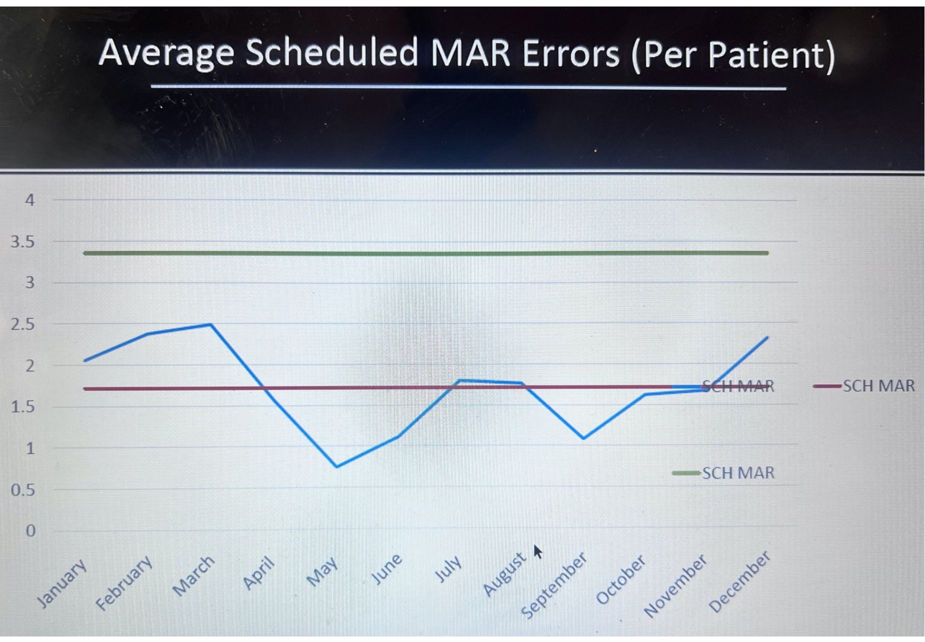
**Patient Age: _____    Patient Gender: ________  Sampled POD Day (1 – 3): _______**

# Con't

| | Data Collection Sheet | Criteria | Y/N | |
|---|---|---|---|---|
| Tool Completion | Multimodal Analgesia Orders | Order completed correctly | Y | N |
| | PRN MAR | Transcription attempted | Y | N |
| | PRN MAR | Type of error (if applicable) | Inc. | Trans. |
| | SCH MAR | Transcription attempted | Y | N |
| | SCH MAR | Transcription correct | Inc. | Trans. |
| | Data Collection Sheet | Criteria | Number of Errors | |
| Pain Assessment and Schedule Conformance | SCH MAR | Schedule compliance (within 1hr) | | |
| | PRN MAR | Documentation correct | | |
| | Flow Sheet and PRN MAR | Assessment completed for administered medication | | |
| | Flow Sheet | Completed Correctly | | |
| | Data Collection Sheet | Criteria | Number of Errors | |
| Dosage Conformance | SCH MAR | Dosage as prescribed | | |
| | PRN MAR | Dosage within range | | |
| | Flow Sheet | Criteria for medicine administration | | |

# Data



# Data

## A collaboration to improve perioperative acute pain care at the University Teaching Hospital of Butare, Rwanda

**Authors:** J. Baumhour[1]; G. Nyirigira[2]; R. Wilson[1,3]; W. Nsabiyumva[2]; J. Parlow[3]; A. P. Johnson[4]; R. Egan[1,*]

## Challenges

- Heavy workload of healthcare providers
- Lack of resources to improve quality of care
- **Socio-economic status of patients**
- Pain medication availability
- OTC medications

## Possible solutions

- ***Always advocacy to policy makers***
- ***Always advocacy to policy makers***
- **Non-pharmacological approaches**
- **Have a Pharmacist on board**
- *Advocacy and education*

# WHAT NEXT THEN ?

1

2

3

4

# INTERNATIONAL ZERO PAIN CONFERENCE, RWANDA

https://www.zeropain.rw

# CONFERENCE,2019

## 235 PARTICIPANTS

# CONFERENCE,2020

## 332 PARTICIPANTS

## 12 COUNTRIES

## 72 INTERNATIONAL PARTICIPANTS

# MULTIDISCIPLINARY APPROACH

# PAIN CLINIC

STOP
LOWER BACK PAIN

# KEY MESSAGE

- Pain services are highly needed in LMIC
- Professional Trainings and advocacy are essential
- Having administration, surgeons on board is important
- Collaboration is a key
- Multidisciplinary team is recommended
- A champions is needed ( it needs to start from someone with passion)
- Pain research is needed

Thank you!

Q&A
TIME