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Implementing an Opioid Stewardship Program to Manage Injectable Opioid Shortage

BIDMC Opioid Stewardship Team

Introduction/Problem

- Drug shortages pose significant public health and safety concerns. National tracking of drug shortages began in 2001. A significant increase in drug shortages was noted over time. The injectable opioid shortage, particularly bolus-dosed IV, reached a critical level at Beth Israel Deaconess Medical Center (BIDMC) in early 2018.
- Injectable opioid shortages are particularly challenging given the range of use in different patient care settings as well as the scope of clinical indications. Injectable opioids are broadly used in general medical/surgical inpatient settings, peri-procedural inpatient and ambulatory settings, and operating rooms. Uses include acute, acute on chronic and chronic pain as well as procedural sedation. Alternative medication options for pain management may not always be appropriate or effective.
- Opioids have different pharmacokinetic and pharmacodynamic parameters, therefore using them interchangeably without taking into consideration patient as well as drug specific characteristics can lead to adverse events. The interchange of one injectable opioid for another is prone to errors due to inappropriate dose conversion as well as pharmacokinetic differences that may predispose to drug accumulation in patients with renal or hepatic dysfunction.
- Given the severity of the shortage and potential impact on patient care, a novel approach to management of the opioid shortage was needed.

Aim/Goal

The goal was to develop consensus on judicious use of injectable bolused dose IV opioids and to reserve injectable opioids to the appropriate patient population and settings.

The Team

May Adra, PharmD, Pharmacy Department
Wendy Chen, PharmD, Pharmacy Department
Michael Cocchi, MD, Critical Care Medicine, Emergency Medicine
Mary Eche, PharmD Pharmacy Department
David Feinbloom, MD, Hospital Medicine
Pat Folcarelli, RN, PhD, Health Care Quality and Safety
Shosana Herzig, MD, Hospital Medicine
John Hrenko, PharmD, Pharmacy Department

Christine Huynh, PharmD Pharmacy Department
Donna Martin, RN, Health Care Quality and Safety
Parth Patel, BSN, RN, Pharmacy Department
Krishna Ramachandran, MD, Anesthesiology
Lauge Sokol-Hessner, MD, Hospital Medicine
Richard Whyte, MD, MHA, Department of Surgery
Julius Yang, MD, PhD, Hospital Medicine

The Interventions

A multi-pronged approach was used to reduce injectable opioid use. Strategies implemented included:

- Optimization of injectable opioid supply in automated dispensing cabinets based on usage patterns in patient care areas
- Pharmacy and Therapeutics (P&T) Committee approval of evidence based criteria for intravenous-to-oral (IV-to-PO) conversion of opioids
- Communications to all caregivers on the opioid shortage
- Changes to the computerized provider order entry (CPOE) system to guide providers to use oral alternatives when appropriate and provide guidelines on dose conversion
- Pharmacists review of medication orders for injectable opioids. Pharmacists recommended alternative drug routes, agents and/or a multi-modal approach to pain management as appropriate.
- Instituting an Opioid Stewardship Team on April 13, 2018 to review and approve all ongoing orders for injectable opioids outside of the Emergency Department, operative/procedural areas and obstetric environment.

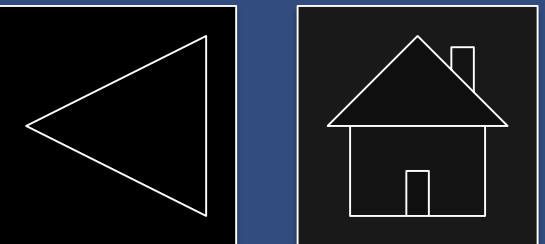
Results / Progress to Date

Visual communication cues were used to inform clinical staff of the impact of the drug shortage on the supply of various injectable opioids and dosage forms. This information was available on the hospital's portal and frequently updated.



A visual example of communication to staff on the status of injectable opioid shortages

For more information, contact:
May Adra, PharmD madra@bidmc.harvard.edu



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More Results/Progress to Date

View OMR Medications

Medication Order Entry

View PAML

Medication:

HYDROMORPHONE (Dilaudid)

Indication:

Choose One

NPO status including medications

Unable to tolerate PO medications (severe NV, dysphagia)

Immediate pain control

Known gastrointestinal malabsorption/short gut

Other

Intermittent shortages of injectable opioids have continued to some degree throughout 2019.

Guidelines for Pain Management

Switch therapy to a clinically appropriate oral or enteral opioid whenever possible.

Provide multimodal pain management by using parenteral and enteral alternatives to opioids.

Consider consultation with pharmacy, pain service, or palliative care as appropriate..

Opioid Conversion Table and Morphine Equivalent Dose Table

Orders for the injectable route are subject to review by the Opioid Stewardship Team.

CPOE changes to guide judicious use of injectable opioids

PRACTICE ALERT

Critical shortage of IV bolus hydromorphone and morphine

Update 04/20/2018

What happened?

There is a nationwide critical shortage of IV bolus hydromorphone and morphine.

The Solution

1. Encourage conversion to enteral (PO/NG) opioids when feasible.

2. Non-opioid multi-modal pain management options (examples: Acetaminophen PO, NSAIDs, gabapentin, pregabalin, etc.) should be used adjunctively.

3. To minimize waste, patient controlled analgesia (PCA) may be continued until able to transition to enteral opioids.

4. For intensive care unit (ICU) patients, fentanyl IV boluses may be used.

5. If a patient is mechanically ventilated and receiving opioid IV drip, boluses may be administered on the Sigma pump using the IV drip.

Effective 04/13/18, BIDMC has instituted an "Opioid Stewardship Program" that will review and approve all ongoing orders (prn and scheduled) for bolus IV hydromorphone and IV morphine outside of the peri-operative environments.

Key elements of this program include:

• Stat orders for single doses for treatment of severe acute pain will NOT require review/approval

• Specific POE indications for ordering bolus IV hydromorphone and morphine will include:

- NPO status including medications
- Unable to tolerate PO medications (severe NV, dysphagia)
- Immediate pain control
- Known gastrointestinal malabsorption/short gut

• Ordering providers may be contacted to review non-IV opioid options for effective analgesia.

• In certain cases, we recognize that IV opioids may represent the only agents available for effective symptom control – in such cases, ordering providers may be contacted to consider "therapeutic substitution" with alternate formulations in least short supply.

• Review and approval will be conducted by an interdisciplinary team of physicians, nurses, and pharmacists

For additional questions, please email John Hrenko, PharmD, RPh at jhrenko@bidmc.harvard.edu.

This alert and prior alerts can be found at:
<https://portal.bidmc.org/Intranets/ClinicalNursing/AnnounceMain/PracticeAlerts.aspx>

ALGORITHM

Mechanically ventilated patient requires analgesia in the ICU during opioid shortage

Utilize multi-modal analgesia in all appropriate patients

Scheduled acetaminophen

Non-steroidal anti-inflammatory

Gabapentin for neuropathic pain

Lidocaine patch

Regional anesthesia

Reassess per pain policy

Continue as needed opioid regimen

As needed intravenous opioids should be ordered for breakthrough pain in all patients

Does patient require >3 bolus opioid doses in 1 hour?

No

Yes

Opioid equivalence:
100 mg of IV fentanyl
= 10 mg IV morphine
= 1.5 mg IV hydromorphone

Fentanyl bolus plus continuous infusion is restricted to patients with severe hemodynamic compromise. Hydromorphone may also be an option in these patients.

Can the GI tract be used?

No

Yes

Oxycodone 5-15 mg PO/NG q 4 hours*
Hydromorphone 2-4 mg PO/NG q 4 hours*

Reassess per pain policy

Hydromorphone 0.5 - 1 mg IV q 4 hours*
Morphine 4 mg IV q 4 hours*
Morphine or hydromorphone continuous infusion

Is pain controlled?

No

Yes

Additional Options:
• Ketamine
• Methadone 5 mg PO/NG q 6 hours

*Doses listed are for opioid naïve patients. Reassess patient response frequently to determine optimal dose.

Titrate to CPOT ≤2, or RASS goal as appropriate

Examples of educational materials provided to staff

Lessons Learned

- Many post-operative order sets contained orders for injectable opioids, which introduced an unnecessary burden on Pharmacy staff to intervene on a higher number of orders. Existing order sets could not be altered in the time frame needed to respond to this critical shortage.
- The need to engage Post-Anesthesia Care Unit (PACU) nurses in this effort was identified. Their engagement in this process would have been valuable in anticipating changes to pain management strategies in peri-operative settings.

Next Steps

- Data on the use of injectable opioids will be analyzed over time to identify the effect of the Opioid Stewardship Program on long-term prescribing patterns. An initial review of multi-modal pain management options indicated an increase in the use of non-steroidal anti-inflammatory medications and gabapentinoids. An in-depth evaluation of the utilization of non-opioid pain management alternatives is needed.

The impact of the Opioid Stewardship Program on injectable opioid use

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