Reducing the risk of patient harm: A focus on opioids

New York State Partnership for Patients (NYSPFP) Initiative

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

ISMP

Disclosure

Matthew Fricker declares no conflicts of interest, real or apparent, and no financial interests in any company, product, or service mentioned in this program, including grants, employment, gifts, stock holdings, and honoraria

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

Objectives

- Identify the causes of adverse drug events with opioid therapy
- Explain the importance of patient assessment and screening prior to initiating opioid therapy
- Identify ISMP best practice recommendations and interventions implemented by hospitals to reduce the potential for adverse drug events with opioids

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES
ISMP

Causes for Adverse Drug Events with Opioids

- Inadequate *patient* assessment
- Inaccurate *pain* assessment*
- Improper pain *management*
- Inadequate patient *monitoring*

*See Joint Commission Pain Management Standards 2002

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

ISMP

Potential Cause?

- Pain Management – Could the emphasis on pain control (*"pain as the fifth vital sign")* contribute to an overly aggressive prescribing of higher doses?
  ("overzealous efforts to use opioids by dedicated prescribers who think they are doing what is being asked of them")

- HSCHPS and Press Ganey scores
- Physician promises – "you will be pain free"

Action Plan Entry

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

ISMP

Importance of Screening

- Therapeutic Appropriateness
  - Choose appropriate drug, dose and frequency
  - Identify high-risk population
  - Increase patient satisfaction
  - Decrease the potential for an adverse reaction
  - Differentiate opioid naïve vs. opioid tolerant
  - Choose appropriate patient (PCA)

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES
ISMP

Polling Question

Which of the following best defines opioid tolerant?

a. patient has taken Percocet tablets QID for 3 days
b. patient arriving on med/surgical unit after receiving 3 doses of fentaNYL 10 mcg over the past 90 minutes in PACU
c. patient has been taking HYDROmorphone 8 mg orally daily for past 7 days
d. patient has taken morphine 25 mg daily for past 7 days

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

Polling Question Answer

An opioid tolerant patient is defined as a patient who has been receiving either morphine 60 mg, oxycodone 30 mg or HYDROmorphone 8 mg, daily for one week or longer.

Source: fentaNYL patch product information

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

Patient Assessment
Best Practice Recommendation

- Assess patient opioid status
  - naïve or tolerant
- Who should make the assessment?
  - prescriber
  - nurse
- Should pharmacy be informed
  - yes (develop procedure for notification)

Action Plan Entry

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

Patient Assessment
Best Practice Recommendation

- Where does the process begin?
  - Medication reconciliation
    - ✓ What medications are you taking at home?
    - ✓ Particular focus on current pain medications
      - opioids (specifically ask about patches)
      - important to ask about duration of opioid
      - therapy (opioid tolerant or opioid naïve)
      - drugs that can cause sedation or respiratory depression

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES
ISMP

Factors Contributing to Opioid ADEs

A = patient was opioid naïve	46%
B = infusion pump set incorrectly	18%
C = inadequate patient monitoring	34%
D = obstructive sleep apnea present	10%
E = patient was obese	30%
F = patient had asthma	5%
G = concomitant use of potentiating drugs	19%
H = improper hand-off	8%

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

Patient Assessment
Best Practice Recommendation

- Assess for additional risk factors that may affect opioid dosing
  - obesity
  - history of respiratory disease
  - sleep apnea
  - elderly
  - concomitant drug therapy

Is there a plan in place to evaluate patients for and document these comorbid conditions?

Action Plan Entry

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

ISMP

Causes for Adverse Drug Events with Opioids

- Improper prescribing – multiple opioids, with multiple doses, via multiple routes, long acting opioids
- Failure to consider patient comorbidities and current opioid use
- Lack of/inadequate patient monitoring
- Lack of knowledge about equianalgesic potency among opioids

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

ISMP

Pain Management Best Practice Recommendation

- Review order sets and avoid multiple opioids, with multiple doses, via multiple routes
- Eliminate range orders (specifically range of frequency)
- Include maximum single dose/daily dose limits
- Provide criteria and directions for the use of naloxone

Action Plan Entry

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

ISMP

Polling Question

- How does the potency of IV HYDROmorphone compare to IV morphine?
  a. HYDROmorphone 1 mg is ≈ to 1 mg morphine
  b. HYDROmorphone 1 mg is ≈ to 4 mg morphine
  c. HYDROmorphone 1 mg is ≈ to 7 mg morphine
  d. not sure

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES
ISMP

Project Question
Equianalgesic Potency

HYDROmorphone 1 mg = morphine 4 mg

- RPh % 26
- Nurses % 35
- Physicians % 36

HYDROmorphone 1 mg = morphine 7 mg

- RPh % 71
- Nurses % 49
- Physicians % 63

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

ISMP

Product Availability
Best Practice Recommendation

- Assess and provide knowledge about equi-analgesic potency among opioids
- HYDROmorphone dosage forms
  - remove 2 and 4 mg HYDROmorphone dosage* forms from unit stock
  - purchase 0.5 mg dosage forms

*restrict 2 mg to specific units only (?)

Action Plan Entry

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES
ISMP

Project Question
Concomitant Drug Therapy

- Which of the following drugs do NOT increase the effect of HYDROmorphone?
  a) hypnotics e.g., Restoril, Ambien
  b) diphenhydramine (Benadryl)
  c) benzodiazepines (Xanax, Ativan, etc.)
  d) acetaminophen with Codeine
  e) all of the above can increase the effect of HYDROmorphone

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

Project Responses
Concomitant Drug Therapy

Which of the following drugs does not increase the effect of HYDROmorphone?	RPh	RN	Physicians
a. hypnotics e.g., Restoril, Ambien	0	0	0
b. Diphenhydramine (Benadryl)	6	3	5
c. Benzodiazepines	0	1	0
d. acetaminophen w/codeine	2	0	2
e. all of the above can increase the effect	91	95	91

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

ISMP

Concomitant Therapy
Best Practice Recommendation

- Concomitant therapy should be reviewed for drugs that could enhance the sedative/respiratory depressive effects of the opioid when:
  - prescribers order opioids
  - pharmacists enter/verify orders for opioids
  - nurses administer opioids

Action Plan Entry

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

ISMP

Preparation and Dispensing Best Practice Recommendation

- Opioid infusions are prepared by pharmacy
- Pediatric opioid dilutions are prepared by pharmacy
- Concentrated opioid oral solutions are dispensed in patient-specific doses

Action Plan Entry

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

ISMP

Patient Monitoring Best Practice Recommendation

- Monitoring requirements are established /enforced for patients receiving opioids
- Patients with continuous opioid infusions and PCA have continuous monitoring of respiratory status using capnography or pulse oximetry
- Nurses assess and document the quality of respirations when administering IV opioids

Action Plan Entry

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

Safety issues with Patient-Controlled Analgesia (PCA)

- Improper patient selection
- Inadequate / ineffective patient education
- Inadequate staff training
- PCA by proxy
- Inadequate monitoring
- Drug product mix-ups
- Prescribing errors

Action Plan Entry

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

ISMP

Safety issues with Patient-Controlled Analgesia (PCA)

- Mis-programming of the PCA pump is, by far, the most frequently reported practice-related issue.
  - Wrong concentrations
  - Wrong basal rate
  - Programming basal rate that isn't ordered (bolus dose only order)
  - Wrong bolus dose
  - Wrong lock-out times
  - Pump allows the patient to change settings

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

ISMP

PCA
Best Practice Recommendation

- Establish standardized protocols and preprinted orders
- Standardize to a single drug as the opioid of choice
- Program catastrophic stops into infusion pumps
- Prohibit verbal orders for *initiating* PCA

Action Plan Entry

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

ISMP

PCA
Best Practice Recommendation

- Independent double checks throughout process, particularly for infusion pump programming
- Eliminate or restrict the use of basal infusion
- Meperidine is not approved for use in PCA

Action Plan Entry

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

ISMP

Safety Issues with fentaNYL

- Improper use (should not be used for acute pain)
- Improper dose titration
- Lack of patient education/counseling
- Unintentional harm in children (improper storage or disposal)

fentaNYL was included in the ISMP quarter watch 10/16/13

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

ISMP

fentaNYL
Best Practice Recommendations

- Long acting opioids are prescribed for opioid tolerant patients only
- Develop effective patient education strategies
  - provide written instructions to guide safe use
    - develop guidelines for safe **use, storage, and disposal**
    - precautions for tasks requiring cognitive function
- ismp.org/AHRQ/default.asp

Action Plan Entry

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES
ISMP

Patient Discharge
Best Practice Recommendation

- Patients discharged on opioids receive discharge teaching including written information

Action Plan Entry

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES
ISMP

Regional HYDROmorphone Project Interventions

(best practices?)

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

ISMP

Interventions Implemented

- Engaging senior management, anesthesia department and surgeons in discussions
- Modifying CPOE and paper order sets
- Removing 2 and 4 mg doses from many care units
- Starting doses of 0.25 mg and 0.5 mg

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

ISMP

Interventions Implemented

- P&T approved – 1 mg for maximum first dose
- Requiring pharmacy intervention and/or pain management team intervention for larger doses
- Requiring pulse oximetry for higher doses
- Purchasing capnography devices

Action Plan Entry

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

Pearls to Take Away

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

Importance of Screening

- Therapeutic Appropriateness
  - Choose appropriate patient
  - Choose appropriate drug
  - Choose appropriate dose
  - Choose appropriate frequency
  - Identify high-risk populations

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

ISMP

Error Detection

- Don't rely on voluntary error reporting to identify problems with opioids
- Regularly monitor other activity or interventions
  - adverse drug reaction reports
  - use of reversal agents
  - rapid response team event records
  - pharmacist interventions

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES
ISMP

Risk Factors

- Prescribing
  - order sets that contain a listing of multiple opioids including HYDROmorphone
  - HYDROmorphone dose range orders without parameters for use
  - order sets that list HYDROmorphone first when in fact it may not be the first drug of choice
  - difficult access to current patient information
    - ✓ knowledge of age, co-morbidities, renal status, opioid naïve status, incomplete reconciliation process

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

Risk Factors

- Dispensing
  - look-alike drug packaging and labeling
  - distribution of an unfamiliar product, concentration, or vial size
  - pharmacy information systems that do not alert the provider against higher doses/frequencies of HYDROmorphone
  - HYDROmorphone doses dispensed (e.g., through the ED or in procedural areas) without review by a pharmacist

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES
ISMP

Risk Factors

- Administration
  - pain management guidelines or policies are ambiguous
  - unit-dose syringes or ampules of 4 mg/mL or greater available in the clinical areas
  - knowledge of equi-analgesic dosing; unclear references for dose limits
  - drug name confusion
  - lack of use of smart pumps and drug libraries with hard stops for HYDROmorphone PCA use
  - complacency with use of high-alert drugs/IV therapies

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

ISMP

Pharmacy Interventions

Order:

HYDROmorphone 0.5 mg IV q4h

HYDROmorphone 1 mg po q4h

Percocet -5 po q4h

Restoril 15 mg po hs prn

Intervention -> po HYDROmorphone discontinued

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

ISMP

Pharmacy Interventions

Order:

- 4 mg IV q4h (was taking 3 mg po q3h at home)
- 14 mg IV q4h (was taking 14 mg po q3h at home)
- 4 mg IV q4h (was taking 4 mg po at home)
- 2 mg IV ordered for 83 y.o. – changed to morphine

- 6 different orders where "prn" was not included in the order
- 1 patient started on fentanyl drip and HYDROmorphone was not discontinued

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

ISMP

Opioid Errors Reported

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES
ISMP

Errors Reported

- FentaNYL 25 mcg patch applied to 17 yo girl , 17 hrs post op jaw surgery. She was discharged home 1 hr after application. Patient died.

- 19 year old male tonsillectomy, received fentaNYL 250mcg, midazolam 2mg, sevoflurane, propofol 250mg, HYDROmorphone 1.4mg intra-operative. Required the administration of naloxone 200mcg IV

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

ISMP

Errors Reported

- Morphine IV 10mg x 2 doses was given by paramedics. Upon arrival respiratory rate was 5 and patient had ashen color. Patient was arousable but somewhat confused. Naloxone 0.4mg IV administered.

- Procedural sedation in ED with fentaNYL and midazolam for a dislocated shoulder. FentaNYL 200 mcg at 2215, then 200 mcg at 2217. Respirations dropped to 4 and O2 sat to 86%. Narcan 2mg was given. The respiratory depression was reversed. The patient was monitored and when stable was discharged to home.

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

ISMP

Errors Reported

- Patient received from PACU very lethargic, diaphoretic with RR 8-10, HR 42-50, pulse ox of 93-94% on 2 liters oxygen via nasal cannula. Patient received Dilaudid, 0.5 mg every 5 minutes x 10 doses. Post op orders were for either 0.2 mg every 5 minutes PRN for moderate pain and 0.4 mg every 10 minutes for severe pain.

- 65 received Dilaudid 2mg IV for 10/10 pain. Subsequently patient became lethargic. Narcan 0.2mg IV admin as ordered per policy.

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

Errors Reported

- 77 year old R
  Received patient s/p laparoscopy with lysis of adhesions. Pt very restless and moaning on arrival. Medicated with a total of 2mg IV dilaudid, 15mg toradol and 50mcg fentaNYL to achieve pain control. Pt required multiple Narcan doses.

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES
ISMP

Role of Pharmacist in Pain Management

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

Pharmacists can play a critical role in opioid safety!

- Identification of patients at risk for respiratory depression
- Recognition of opioid overdose
- Provision of recommendations for appropriate initiation and monitoring of opioid analgesics
- Detection of medication related side effects
- Assessing risks of addiction and abuse
- Education of health care professionals on appropriate analgesic management
- Development of institutional policies and procedures to ensure safe use of opioids

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

ISMP

Effective Processes

- Strategies for reducing risk of post operative respiratory depression
  - NSAID use to reduce opioid consumption in appropriate patients
  - Guideline development for reduced opioid dosing intra-operatively and in the post anesthesia care unit
  - Remove higher dose syringes from floor stock
  - Delay PCA initiation in patients remaining sedated in post anesthesia care unit
  - Pre-operative sleep apnea assessment

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

ISMP

Effective Processes

- Identify symptoms of opioid overdose or withdrawal to facilitate proper medical care
- Create and implement policies and procedures for tracking and analyzing opioid-related incidents for quality improvement purposes
  - Naloxone utilization review
  - Naloxone guidelines
  - Naloxone order set with decision control
  - Review of opioid related rapid response/code details

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

Safe Technology

- Pharmacist input on development of hospital and pharmacy systems promoting safe opioid use
  - Order set development
  - Alerts based on age and co-morbidities
  - Identification of opioid tolerant patients
  - Red flag alerts for dose verification, interactions, duplications, and/or dosing limits
  - Strategies on differentiating look-alike/sound-alike medications

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

Education and Training

- Provide education on use of pharmacologic and non-pharmacologic analgesic therapies
- Present strategies for recognition and assessment of potential opioid adverse effects
- Deliver patient and caregiver education
- Analyze reports of near misses and staff observations of unsafe use with respect to opioids
  - Provides information on knowledge gaps
  - Development of improvement strategies based on identified gaps

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

Pharmacist Interventions

- Assessment of opioid use history
  - Medication reconciliation review to determine opioid naïve vs. tolerant status
  - Identification of risk factors for respiratory depression
  - Identify drug interactions that increase respiratory depression risk
    - ✓ benzodiazepines
    - ✓ additional opioids

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

Pharmacist Interventions

- Recommend appropriate opioid medication and dose based on patient specific factors
- Verify dose conversions, especially when new drug or route of administration differs from current therapy
- Monitor for duplicate reasons and appropriate potencies on “as needed” opioid orders
- Verify ordered medication is being given for associated level of pain

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

How Do I Become a Pain Expert?

- Develop an area of interest in your current practice
  - Become the expert! Monitor patients for inappropriate analgesic treatment
  - Develop educational initiatives
  - Contribute to policy and procedure development for safe and effective analgesia management

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

ISMP

How Do I Become a Pain Expert?

- ASHP Foundation Pain and Palliative Care Traineeship: 3 tiered educational initiative
  - Level 1: Knowledge Based Education
  - Level 2: Application Based Education
  - Level 3: Live Experiential Program (practice based)
    - Completion of level 1 and 2 required

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

How Do I Become a Pain Expert?

- American Society of Pain Educators
  - Multidisciplinary certification in pain education
  - Emphasis on adult teaching techniques
  - Tufts University Pain Research, Education, and Policy program
  - Primarily online
  - 5 credit certificate and 11 credit masters degree program offered

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

ISMP

Resources

- American Academy of Pain Management Guidelines
- American Pain Society Clinical Practice Guidelines
- Pain management web sites
  - www.pain-topics.org
  - www.painedu.org
  - Medscape - www.medscape.com/resource/pain
- The Joint Commission Sentinel Event Alert
  - Safe use of opioids in the hospital

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES

ISMP

Questions

©2013 INSTITUTE FOR SAFE MEDICATION PRACTICES
ISMP