High-Alert Medications: A Look at the Safe Use of Narcotics

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American Hospital Association

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Risk Identification in Healthcare

- The detection of a potential or actual problem associated with patient care
- Recognizing variations in process or unexpected outcomes which may or may not involve patient harm

Risk Identification in Healthcare

- **Why?**
  - Do we have a problem?
  - What is the extent of the problem?
  - Have improvement efforts been successful?
  - How do we compare to others?

Methods to Identify Risk

- Voluntary error reports
- Reported adverse drug reactions
- Pharmacy interventions
- Use of triggers
- Rapid response team information
- Data from technology (CPOE, bar coding, smart pumps, ADCs)
- Falls data
- Aggregate review of sentinel events

“Triggers”

- Medications, laboratory tests, patient conditions, etc. that prompt a proactive look at the patient or retrospective review of the medical record
- Implement both concurrent and retrospective trigger programs – technology or manual
- Incorporate into new technology

“Triggers” Examples

- INR > 6
- Blood Glucose > 300
- PTT > 100 seconds
- One time doses of Narcan, Romazicon
- Order for one time diphenhydramine or steriods
- Stat blood levels for medications
- Abrupt discontinuation of a medication
- Initiation of antibiotics during hospitalization
- Oversedation, falls
- Rapid response team call – stat respiratory calls
- Transfer to another level of care

External Sources of Information

- ISMP, FDA, Joint Commission sentinel event advisories, and information from other quality and safety resources
- Information from others within the health-care system
- List-serves, networking, meetings
- Ask - “Are these conditions present here?”;

  “Can this error happen here?”
- Safeguard against low frequency high harm events

Errors with Narcotic Analgesics

- Approximately one out of four reports received in PA-PSRS involve high-alert medications
- Of those reports, 44% involved pain management medications including
  - morphine
  - HYDROmorphone (DILAUDID®)
  - meperidine (DEMEROL®)
  - fentaNYL

PA PSRS = Pennsylvania Patient Safety Reporting System.

Pennsylvania Patient Safety Reporting System. *PA PSRS Patient Safety Advisory*. 2004;1(3):1-19.

Leading Products in Harmful Medication Errors, CY 2006

Generic Name	n	%
Insulin	428	16.2
Morphine	123	4.6
Heparin	83	3.1
HYDROmorphone	71	2.7
Warfarin	61	2.3
FentaNYL	59	2.2
Potassium chloride	53	2.0
Vancomycin	45	1.7
Enoxaparin	44	1.7
Diltiazem	37	1.4

Hicks RW, et al. MEDMARX data report. A report on the relationship of drug names and medication errors in response to the Institute of Medicine's call for action. Rockville, MD: Center for the Advancement of Patient Safety, US Pharmacopeia; 2008.

Scope of the Problem with Prescribing Narcotics

- Lack of patient information for dosing decisions
  - Age, height, weight, laboratory values
  - Is the patient opioid naïve?
- Lack of knowledge of equi-analgesic dosing
- Lack of standardized protocols/ or use of complex protocols to guide care
- Nomenclature issues
  - Abbreviations (MS)
  - Suffixes
  - Special ‘cocktails’

Pharmacokinetics of Select Medications

Drug	Onset of Action	Duration of Action
Morphine Immediate Release	~ 30 minutes	4 hours
Morphine IV	5 – 10 minutes	4 hours
Morphine Extended Release		8 – 24 hours
FentaNYL IV	"almost immediate"	0.5 – 1 hour
FentaNYL Transmucosal	5 – 15 minutes	Related to blood level; respiratory depressant effect may last longer than analgesic effect
FentaNYL Transdermal	6 hours	12 hours after removal of patch
	http://online.lexi.com/crlsql/servlet/crlonline	
HYDROmorphone oral	15 – 30 minutes	4 – 5 hours
HYDROmorphone IV	5 minutes	4 – 5 hours

Figure 3. RN screening for sleep apnea

- Is the patient's body mass index greater than 25?
- Does the patient have a history of excessive daytime sedation?
- Does the patient have a history of snoring?
- Does the patient have a history of hypertension?

If two of the factors are positive, consult respiratory therapy for a modified Berlin sleepiness screening.

Annuals of Internal Medicine: **Using the Berlin Questionnaire To Identify Patients at Risk for the Sleep Apnea Syndrome 1999 vol 131 no 7 485-491** Nikolaus C. Netzer, MD; Riccardo A. Stoohs, MD; Cordula M. Netzer; Kathryn Clark; and Kingman P. Strohl, MD

Survey Staff

N= 21 respondents

Experienced Nurses: 19 GN: 2

1. What is the difference in potency between 1 mg IV HYDROmorphone and 1 mg Morphine IV?

a. HYDROmorphone 1 mg is ≈ to 1 mg Morphine (3 respondents)

b. HYDROmorphone 1 mg is ≈ to 5 mg Morphine (8 respondents)

c. HYDROmorphone 1 mg is ≈ to 7 mg Morphine (5 respondents)

d. Not sure (5 respondents)

Scope of the Problem with Narcotics

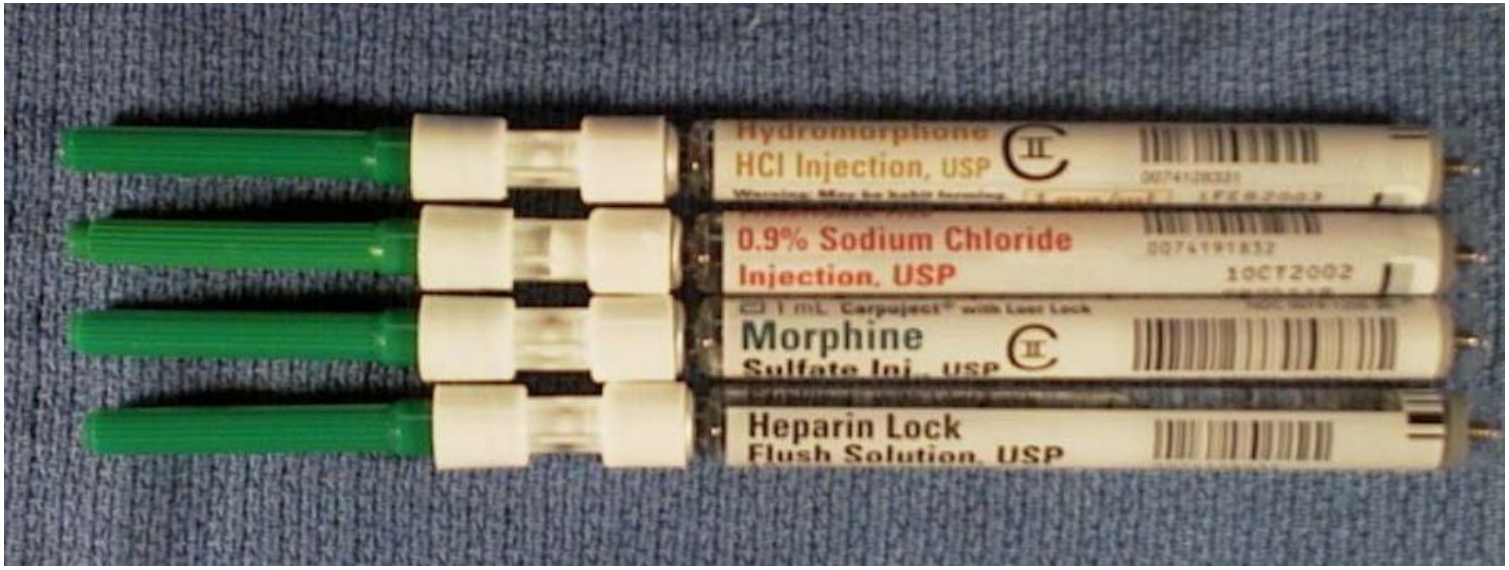
Administration/Storage

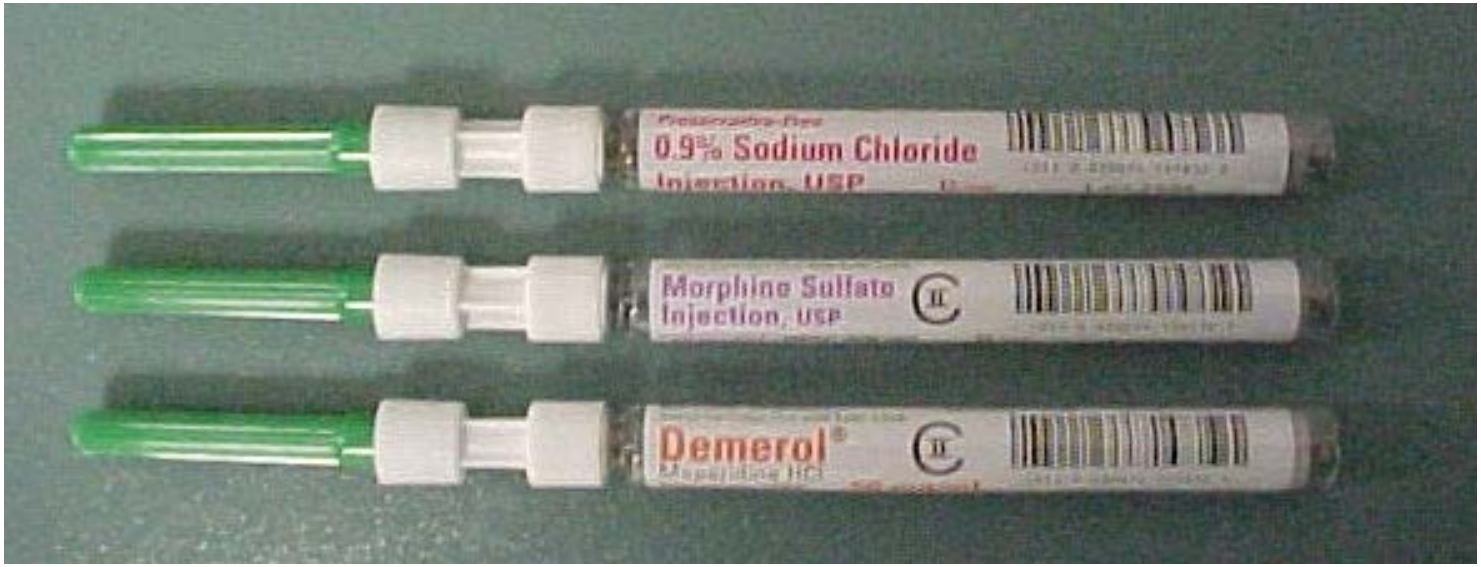
- Nurses left to decipher the intent and select drug formulation without specific guidance
  - Lack of specificity of prn order
  - Mild, moderate, severe pain
- Sound-alike and look alike drug names and packaging
- Similar packaging
- Lack of lock boxes to secure large volume opioid infusions and frequent intermittent injections (PACU, ED)

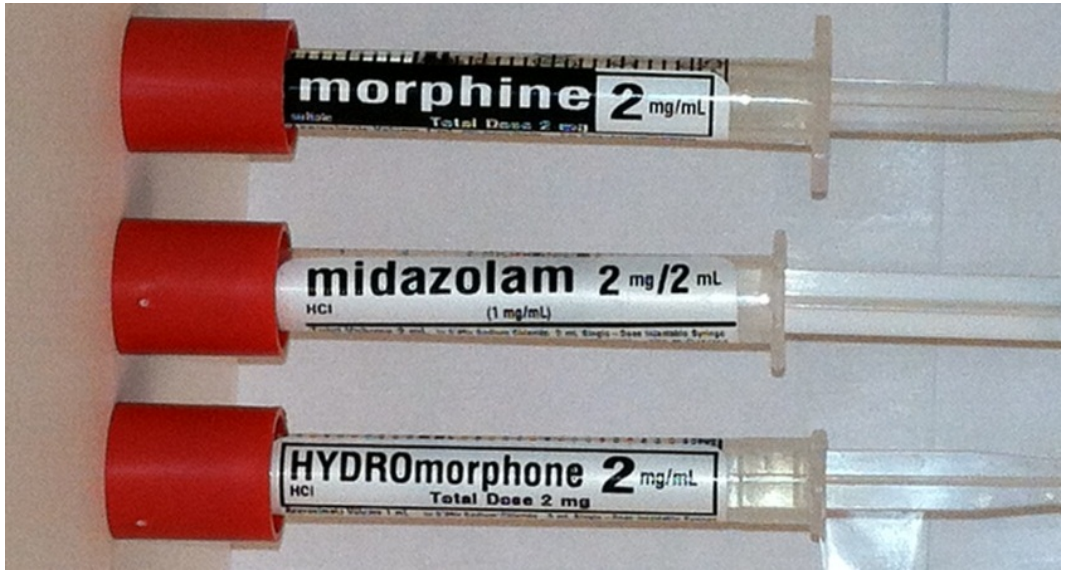
Subjective and Objective Pain Scales

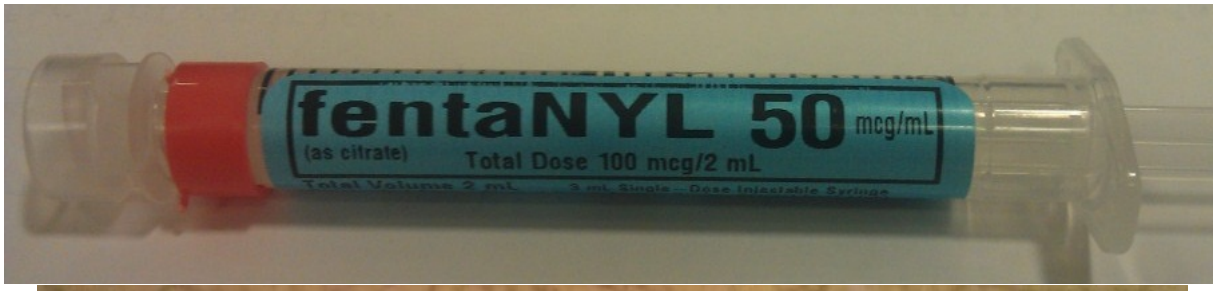
FACIAL EXPRESSION	
Score	**Description**
0	No particular smile or expression
1	Occasional grimace, tearing, frowning, and/or wrinkled forehead
2	Frequent grimacing, tearing, frowning, and/or wrinkled forehead
ACTIVITY	
Score	**Description**
0	Lying quietly, normal position
1	Seeking attention through movement or slow cautious movement
2	Restless excessive activity and/or withdrawal reflexes
GUARDING	
Score	**Description**
0	Lying quietly, no positioning of hands over area of body
1	Splitting areas of the body, tense
2	Rigid, stiff
PHYSIOLOGIC PARAMETER	
Score	**Description**
0	Stable vital signs
1	Change over past 4 hours in any of the following SBP > 20mmHg or heart rate > 20 bpm
2	Change over past 4 hours in any of the following SBP > 30mmHg or heart rate > 26 bpm
RESPIRATORY	
Score	**Description**
0	Baseline respiratory rate/oxygen saturation, compliant with ventilator
1	RR > 10 above baseline or 5% decrease in oxygen saturation, mild ventilator asynchrony
2	RR > 20 above baseline or 10% decrease in oxygen saturation, mild ventilator asynchrony

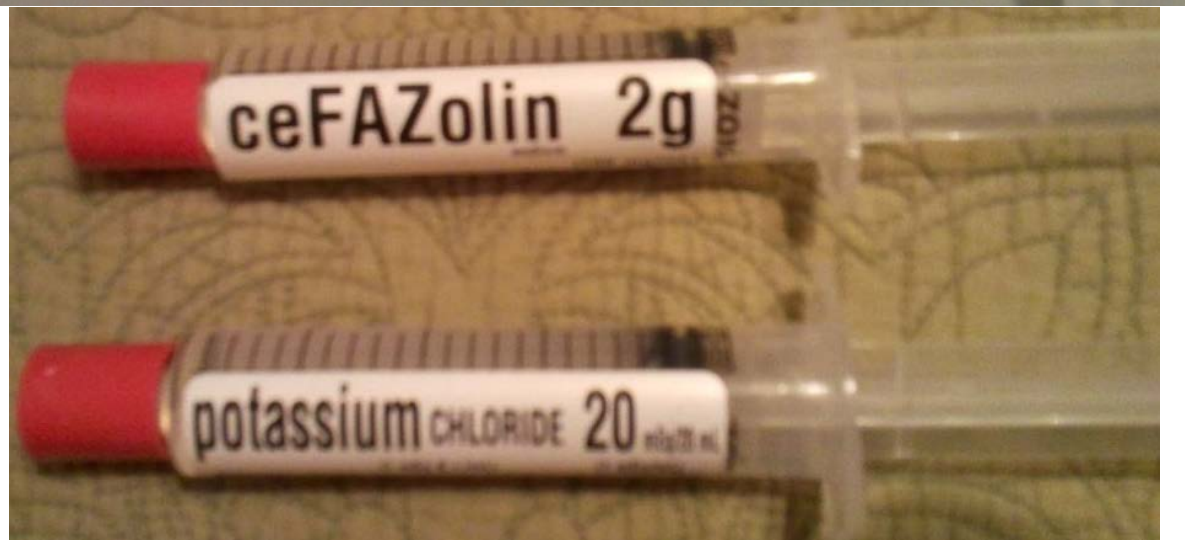
SCORE: _____ Target Pain: 0-1

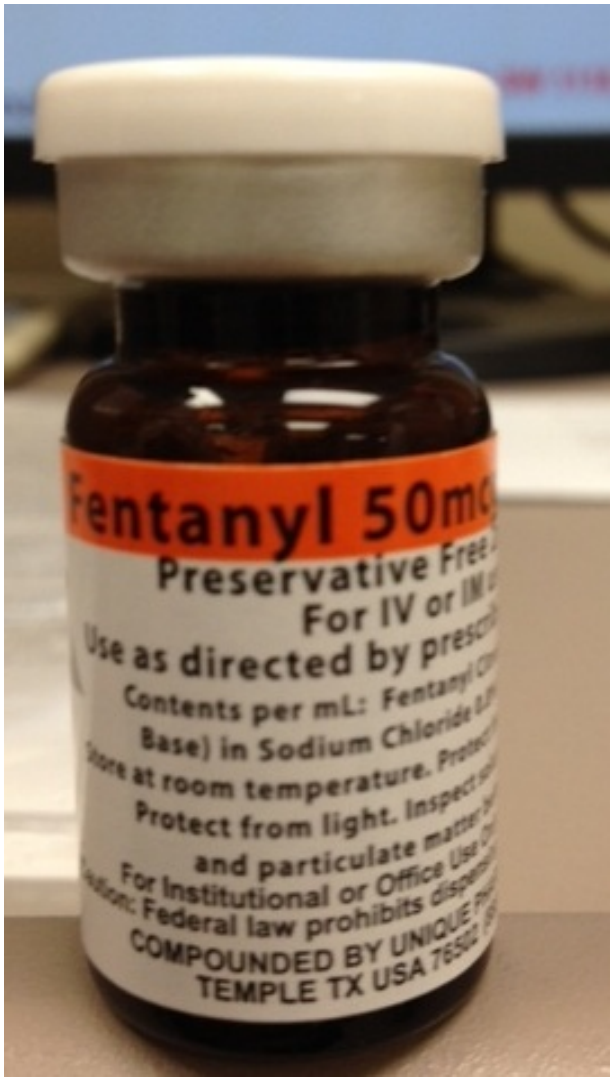

Hydromorphone
HCl Injection, USP
II
0.9% Sodium Chloride
Injection, USP
10CT2002
Morphine
II
Heparin Lock
Flush Solution, USP

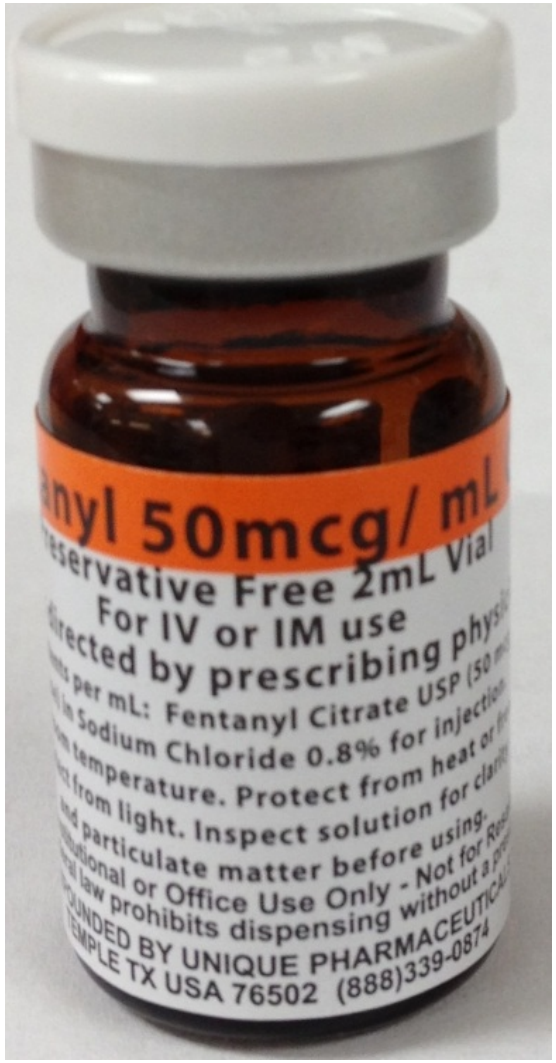

0.9% Sodium Chloride
Morphine Sulfate
Injection, USP
II
Demerol®
II


morphine 2 mg/mL
midazolam 2 mg/2 mL
HCl
(1 mg/mL)
HYDROmorphone 2 mg/mL
HCl
Total Dose 2 mg


fentaNYL 50 mcg/mL
(as citrate)
Total Dose 100 mcg/2 mL


ceFAZolin 2g
potassium CHLORIDE 20


Fentanyl 50mc
Preservative Free
For IV or IM
Use as directed by
Contents per mL: Fentanyl
Base) in Sodium Chloride
Store at room temperature.
Protect from light. Inspect
and particulate matter
For Institutional or Office Use
Caution: Federal law prohibits
COMPOUNDED BY UNIQUE
TEMPLE TX USA 76502


nyl 50mcg/ mL
eservative Free 2mL Vial
For IV or IM use
irected by prescribing
nts per mL: Fentanyl Citrate USP
in Sodium Chloride 0.8% for
m temperature. Protect from
t from light. Inspect solution
nd particulate matter before
For Institutional or Office Use Only - Not for
l law prohibits dispensing without a
UNDED BY UNIQUE PHARMACEUTICAL
TEMPLE TX USA 76502 (888)339-0874

Monitoring

- Lack of standardized protocols to guide monitoring
- Use of narcotics with sedatives for procedures as ‘analgesia’ versus conscious sedation
- Consistency of the process in ED, Radiology, Cardiac, GI suite to discharge patients
  - Availability of equipment
  - Knowledge of safe parameters
- Inadequate patient education
  - Expectations of pain control
  - Selection for PCA therapy

Rank Order of Error Reduction Strategies

Forcing functions and constraints

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Automation and computerization

↓

Standardization and protocols

↓

Checklists and double check systems

↓

Rules and policies

↓

Education / Information

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Be more careful, be vigilant

QUESTIONS