Session 2
Improving Narcotics and Opiate Management

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Steve Meisel, Pharm.D., IHI Faculty

January 31, 2012
12:00 - 1:00pm ET
Beth O’Donnell, MPH

Beth O’Donnell, MPH, Institute for Healthcare Improvement (IHI), is responsible for managing and coordinating strategic partnerships. Ms. O’Donnell received her undergraduate degree at St. Lawrence University and her graduate degree from The Dartmouth Institute for Health Policy and Clinical Practice. She joined IHI in August.
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Where are you joining from?
Frank Federico, RPh, Executive Director, Strategic Partners, Institute for Healthcare Improvement (IHI), works in the areas of patient safety, application of reliability principles in health care, preventing surgical complications, and improving perinatal care. He is faculty for the IHI Patient Safety Executive Training Program and co-chaired a number of Patient Safety Collaboratives. Prior to joining IHI, Mr. Federico was the Program Director of the Office Practice Evaluation Program and a Loss Prevention/Patient Safety Specialist at Risk Management Foundation of the Harvard Affiliated Institutions, and Director of Pharmacy at Children’s Hospital, Boston. He has authored numerous patient safety articles, co-authored a book chapter in *Achieving Safe and Reliable Healthcare: Strategies and Solutions*, and is an Executive Producer of "First, Do No Harm, Part 2: Taking the Lead." Mr. Federico serves as Vice Chair of the National Coordinating Council for Medication Error Reporting and Prevention (NCC-MERP). He coaches teams and lectures extensively, nationally and internationally, on patient safety.
Steven Meisel, Pharm.D., Director of Patient Safety for Fairview Health Services, an integrated health system based in Minneapolis, Minnesota. In this role he is responsible for all aspects of patient safety improvement, as well as related measurement, reporting, educational and cultural initiatives. Dr. Meisel has served as faculty for the Institute for Healthcare Improvement safety since 1997. Dr. Meisel is the recipient of numerous awards, including the 2005 University Health-System Consortium Excellence in Quality and Safety Award. He is the author of several publications.
Overall Objectives

Participants will be able to:

• Identify opportunities to decrease Adverse Drug Events (ADEs)

• Describe three process changes needed to reduce ADEs

• Discuss what measures are needed to determine the impact of interventions
Session Agenda

• Homework – We did you learn?
• Narcotic Oversedation
  o Patient Assessment & Monitoring
  o Individualization of Therapy
  o Communication
  o Root Cause
  o System Changes
• Q&A
• Homework
Homework

• Assignment
  o Review your approach to medication safety.
  o How are you measuring safety?
  o How do you identify opportunities for improvement?
  o How do you decide what to work on to improve medication safety?
Narcotic Oversedation: Making the Unavoidable Avoidable

Steven Meisel, Pharm.D.
Director of Patient Safety
Fairview Health Services
Fairview Health Services

- A fully integrated health system comprised of 8 hospitals, 50 primary care clinics, 50 retail pharmacies, home infusion, a home care & hospice agency, a pharmacy benefits management company, and various other programs.
- Hospitals range from small rural/primary care to large university adult and pediatric tertiary care.
- Services include academic teaching, transplant, pediatrics, behavioral, and extended care.
- Pioneer accountable care organization
Journey Began in 1998

• During that time:
  - Fairview implemented 2 different EHRs
  - Fairview converted to a Pyxis profile system
  - Acquisition and consolidation of medical groups
  - Built and opened a new children’s hospital
Seminal Events

• 1998: middle-age woman suffered a respiratory arrest in the PACU; not detected quickly enough; disability proved permanent.

• 1998: otherwise healthy middle-age gentleman underwent orthopedic procedure. The next day he was found in respiratory arrest and could not be revived.

• 1999: otherwise healthy high-school age patient admitted for minor surgery. 6 hours after arrival on the floor, found in respiratory arrest. Recovery efforts were unsuccessful.

• All of these events were associated with narcotic use.
Oversedation Investigation

• Retrospective chart review findings in 1 hospital found 11 postoperative patients over 2 month period required naloxone to reverse serious oversedation*.

*NCCMERP rating F-I

Initial Work at 1 Hospital

• Oversedation team chartered April 2000
• Interdisciplinary group
  − Nurses, pharmacists, anesthesiologists, CRNAs, house physician, respiratory therapists & quality improvement staff
Aim

Reduce serious narcotic over-sedation in post-op patients by 75% while not adversely influencing therapeutic pain outcomes.
Focus Areas

• Patient assessment & monitoring
• Individualization of analgesic therapy
• Interdisciplinary & interdepartmental communication
Focal Points

- Operating room
- Recovery room (PACU)
- Post-operative floors
Challenges

- “Silo” thinking
- “Must be a problem with post-op care”
- Limited resources
- “Cost of doing business”
- Lack of standardization
- No ‘one root cause’
- Nothing in current literature
2001: Patient Assessment & Monitoring Operating Room

- Highlight history of snoring & sleep apnea as part of history
• Change discharge guidelines to ensure patient is stable upon transfer
• Eliminate use of oxygen for comfort care
• Hold patients for at least 30 minutes following narcotic dose
• Hold patients for at least 30 additional minutes if naloxone administered in OR PACU
2001: Patient Assessment & Monitoring Post-Operative Floors

- Vital signs monitoring schedule modified
- Continuous pulse oximetry
- New vital signs flow sheet established
- Educate nurses against using narcotics to treat anxiety
2001: Individualization of Therapy

Operating Room

- Eliminate or reduce morphine dose at end of case
- Reduce intra-operative doses of fentanyl
- Increase use of regional anesthesia
- Increase use of ketorolac
2001: Individualization of Therapy

Recovery Room

- Lower doses of morphine used
- Remove morphine syringes of > 4 mg from floor stock
- Wait to start PCA until patient is on the floor for patients who are not alert enough to safely self-manage
2001: Individualization of Therapy
Post-Operative Floors

- Pain orders modified to reduce maximum dose of morphine
- PCA orders modified to discourage basal rate
- PCA orders modified to include a 1-hour limit
- Pain orders modified to treat respirations ≤ 8 from <8
- Remove morphine syringes of > 2mg from floor stock/Pyxis over-ride status
2001: Communication Operating Room

- Communicate with PACU staff any sleep apnea history
- Communicate with PACU staff any intra-operative use of naloxone
- Reorganized structure of anesthesia department
- Clarify accountabilities between nurse anesthetists and anesthesiologists
- Standardize anesthesia practice
Revise communication upon transfer to post-operative floor

Adopt a single set of PACU pain orders

Revise epidural analgesic orders

Standardize volume of epidural analgesic bags dispensed by the pharmacy
2001: Communication Post-Operative Floors

- All naloxone usage reported to house physician
- Re-emphasize that oxygen is to be administered only upon a physician’s order
- Improve pre-operative education to manage patient’s expectations
- Nurses carry phones to enable 1:1 report from PACU staff
Mid-2001: “Sun Setting” the Project

- Goal of 75% reduction in serious oversedation in post-op patients accomplished
- Team disbanded to be replaced by Pain Management Committee
Alarming Upward Trend

- By December 2001 oversedation incidents on the increase
- 4 cases in February 2002 when hydromorphone introduced on Postop Pain Orders
- Large increase in naloxone cases on non-surgical units
Narcotic Oversedation
# Discharges for every event

Team sun-setted
Pain Team Established 2002

Long term focus on pain management and adverse events
2002 Identified Root Causes

- Staff knowledge & critical thinking skills
- Physician knowledge
- Documentation, sedation assessment and pain assessment
- Miscommunication
2002 Root Cause #1: Staff Knowledge & Critical Thinking Skills

- Skills day programs
- 1:1 staff education; real-time mentoring
- Mandatory I-pump™ education, epidural vs. PCA
- Mandatory competency package
- Pharmacy pain management training
- Posters & wallet cards
- Modify post-op pain and epidural orders
2002 Actions
Root Cause #2: Physician Knowledge

- Grand rounds
- Pain education at specific clinics
- Revised post-op pain orders
- Letters sent to all physicians
- Posters and wallet cards
- Pain management team available for consults
- Education at specified medical department meetings
2002 Actions
Root Cause #3: Documentation & Assessment

- New policies written for pain assessment
- New frequent vital signs documentation form
- One on one staff education
- Nurse competency for pain management
2002 Actions

Root Cause #4: Miscommunication

- Pain team assesses all post-op patients
- Post-op & PACU staff meet to discuss communication processes
- Modify post-op pain orders and epidural orders
- Pre-package hydromorphone syringes into 0.2 mg size
- Restrict floor stock/Pyxis over-ride of hydromorphone to syringe sizes < 1 mg
2003 – 2006 Actions

- FMEA on fentanyl PCA
- Standardized recovery room orders
- Nausea, vomiting, and ileus prevention
- Emergency administration of naloxone does not need a physician’s order
Narcotic Oversedation

# Discharges for Every Code 3 or 4 Event

![Graph showing the number of discharges for narcotic oversedation from 2000 to 2006. The graph indicates a significant increase in cases from 2003 to 2005, with a peak of 24,000 cases in 2005. There were zero cases in 2005 or 2006.]
System-Wide Spread Began Spring 2003
System Initiative Goals

• Spread learnings and best practices across Fairview
• Identify new opportunities for improvement
• Standardize & consolidate policies, procedures, order sets, and forms
System-Wide Accomplishments

• Range order policy
  – Prohibit any range more than 2-fold
• Standardized PCA orders
  – No basal rates
• Renal dosing & drug selection
  – Remove meperidine from the formulary
• Pyxis over-ride restrictions
System-Wide Accomplishments

• Modified & standardized measurement
  – Component of the system strategic dashboard
• Standardized documentation on e-MAR & flowsheets
• Standardized pain assessment scales
• Extensive education
• Guidelines for procedural sedation
• Simplify selections of epidural infusions
System Accomplishments

• Naloxone order accompanies every narcotic order
• New smart pumps with bar-coding and dose limits
  – Used for PCA & continuous IV infusion
• New smart pumps for epidural infusion
  – Impossible to interchange with IV medications
In Process

- Capnography monitoring
  - Fully live at 2 hospitals; partial at a 3rd with plans to be complete by 2Q 2012
- Additional resources and dedicated physician staff at the largest University hospital
- Ongoing optimization of the EHR
PCA Errors with ADE

New pumps deployed 4Q 2008
Significant Narcotic Events

64.7% reduction from 2008
Lessons Learned

• Recognize there is a problem and that the problem is not a cost of doing business.
  − Relying on other hospitals’ perceptions, performance, or benchmarks guarantees mediocrity.
Lessons Learned

• Recognize there is no single “quick fix”.
  – If one existed, we’d have done it long ago.

• Recognize that going after adverse events due to error is insufficient: most of the problems did not relate to overt error.
Lessons Learned

• Policies, forms, learning packets, dose conversion charts, etc. are necessary but insufficient to improve outcomes. Changing practice requires a change in critical thinking and can only be achieved by 1:1 dialogue, mentoring, and oversight.
Lessons Learned

• Work on multiple avenues at once.
  − OR, PACU, Patient Care Unit
  − Competencies, order forms, dosing cards, assessment, monitoring, dispensing, communication, oxygen use

• Small, rapid tests of change can lead to sustainable changes.
Lessons Learned

• Must measure to know if the aim is being achieved. This includes chart review.
  – Measurement and chart review is time consuming but without it many opportunities may go unnoticed.
Lessons Learned

• To achieve excellence, must identify and correct all sources of failure no matter how uncommon.
  - Hydromorphone syringes
  - Epidural analgesic bag sizes

• Initial impressions and prejudices regarding root causes are often incorrect.
Lessons Learned

• Standardization is key. Individual practice and unit-defined norms can lead to confusion & complicate care.
  – Order sets
  – Syringe sizes
  – Sedation scales
  – Criteria for giving naloxone
Lessons Learned

• Dedicate resources: over the long-term
  – Initial improvements evaporated after the original team was disbanded.
  – Current teams continues to find and correct opportunities.
  – Average event costs $10,000 - $17,000, including the cost of conducting the RCA.
    ➢ Occasional event can cost >$100,000
    ➢ Cost of fatal events is incalculable
Lessons Learned

• Active engagement by senior management
  – Set the bar high
  – Help break through barriers
  – Send the message that the status quo is unacceptable
  – Don’t be too eager to declare victory
Thank You

Questions
Homework for Next Call

• Review your system for ensuring safety with narcotics/opiates
• How are you identifying opportunities for improvement with this group of high-alert medications?
• What outcome and process measures are you using, or will use?
Next Call

Session 3- Improving Insulin Management

Date: Tuesday, February 14th
12:00-1:00pm ET
Listserv

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