QUALITY INDICATORS FOR POST-OPERATIVE PAIN MANAGEMENT

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Conflict of Interest Disclosure

• Authors Conflicts of Interest:
  • Manworren, No conflict of interest
  • Gordon, Honorarium for Advisory Boards, Mallinckrodt, Cadence Pharmaceuticals
  • Samuels, No conflict of interest

Objectives:

• Describe global efforts to improve quality in post-operative pain management.
• Debate the appropriateness of using a value index, pain intensity scores, opioid requirements, opioid side effects, patient satisfaction, and pain assessment process audits as outcome measures in post-operative pain management research studies and quality improvement efforts.
• Discuss the challenges of extracting data from the electronic medical record and describe ASPMN’s efforts to standardize EMR nomenclature, technological innovations for capturing data, and global efforts to improve post-operative pain management.

[Image of Pain Management Nursing]
Quality Indicators for Post-Operative Pain Management

ASPMN
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Objectives

1. Describe quality pain management outcome measures for quality improvement, research, and performance
2. Discuss implications of measurement
3. Describe national and global efforts to improve quality in post-operative pain management, including the validated patient level outcomes contained in the APS-POQ-R

First: Some Essential Challenges

• Everyone wants measurement
• No one wants to be measured
• What you want, you’ll never be able to get
• Measurement is not a neutral activity
For most people quality is like beauty: It has a positive connotation but denotes nothing measurable


What is Quality (Best Practice) Pain Management?

• Appropriate assessment (routine screening, comprehensive initial assessment, and frequent reassessments)
• Interdisciplinary, collaborative care planning that includes patient input
• Appropriate treatment that is efficacious, cost conscious, culturally and developmentally appropriate and safe
• Access to specialty care as needed


Complexity of Quality and Safety

• Multidimensional
• Poor outcomes can occur despite best health care, and patients may do well despite poor quality
• Relationships between structures, processes, and outcomes are unknown
The Three Faces of Quality Measurement

• Research: to advance science, establish relationships
• Improvement: internal measures to understand processes and target improvements
• Accountability: external measures used for comparisons to make decision about purchasing health care

Different definitions and measurement approaches are necessary for different purposes

Quality Science

• Methodology, tools, measures, and standards
• Skills that assist in identifying failures in processes and systems that lead to breakdowns and errors
• Knowledge of
  • Systems
  • Variation
  • Psychology
  • How to Gain Knowledge

Quality Improvement

A data driven systematic approach to improving care locally. A process by which individuals work together to improve systems and processes with the intention to improve outcomes.

– Publications of results are often limited to lessons learned instead of generalizable results


The Efficacy and Safety of Pain Management Before and After Implementation of Hospital-Wide Pain Management Standards: Is Patient Safety Compromised by Treatment Based Solely on Numerical Pain Ratings?

Hector Vila Jr., MD; Robert A. Smith, MD; Michael A. Augustyniak, MD; Peter A. Nagi, MD; Raj G. Saha, MD; Thomas W. Bias, MD; Alan B. Gruber, MD; Jennifer M. Stickleland, MD, and Rafael V. Migdal, MD

Department of Anesthesiology, Department of Performance Improvement, Biostatistics and Epidemiology Core, Department of Pain Management, Department of Clinical Pharmacy, and the Department of Biostatistics, University of Miami Miller School of Medicine, Miami, Florida.

Abstract

Background. In response to the Joint Commission on Accreditation of Healthcare Organizations' focus on pain, hospital-wide pain management guidelines were developed in 2002. To determine whether these standards have improved pain management, theeffect of the Joint Commission Pain Standards on patient satisfaction was assessed.

Methods. The study was conducted using a self-administered questionnaire that was mailed to patients admitted to the medical-surgical unit at a teaching hospital in the northeastern United States. Patients who received pain medication in the previous 24 hours were included, and those who did not were excluded. The questionnaire assessed pain intensity, patient satisfaction with pain management, and patient and nurse perceptions of analgesic effectiveness. Data were analyzed using bivariate and multivariate statistical techniques.

Results. A total of 1,052 patients were included in the analysis, and 76% of them reported receiving pain medication in the preceding 24 hours. The median pain rating was 6 on a 10-cm scale. The proportion of patients who reported receiving pain medication was significantly higher among those who responded to the questionnaire (90%) than among those who did not respond (76%). The questionnaire was returned by 511 of the 758 eligible patients (67%). There was no significant difference in median pain intensity between those who responded and those who did not respond. The median pain score was higher among those who were not satisfied with their pain management than among those who were satisfied (8 vs. 6, P < .05). The median pain score was lower among those who perceived their medication as effective than among those who did not (6 vs. 8, P < .05).

Conclusions. The results of this study suggest that hospital-wide pain management standards have improved patient satisfaction with pain management. However, further research is needed to determine whether these standards have led to improved pain management and patient outcomes.

Pain QI Measurement Limitations

- Lack of precise or operational definition of quality pain management, the indicators, and measures
- Timing
- Perceptions vs. reality
- Interference of caring
- Little known about other possible indicators: quality across transitions, interprofessional teamwork...
- Need translational research to help bridge gaps
APS-POQ-R History

- First published\(^1\) in 1995
- Significant modifications suggested\(^2\) after 10 years of national use
  - Removed perceived wait time, beliefs, DC instructions
  - Added emotional interference, side effects
- Preliminary psychometrics published\(^3\) in 2010
- Validated in 2011\(^4\)

1. APS Quality of Care Committee (1995). *JAMA, 1995;274*:1874-1880

Validation of the APS-POQ-R

- N = 529
- September 2009 thru February 2011
- 7 hospitals
  - Midwest and South-Atlantic
  - 2 Academic, 5 Community
  - Bedsize 71 to 708
- Convenience sampling of adult inpatients
- IRB minimum review/waiver of consent
- All procedures in accordance with HIPAA regulations and institutions protections for human subjects

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<td>.863</td>
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<td>.867</td>
<td>.839</td>
<td>.816</td>
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<tr>
<td>Interference activities out of bed</td>
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<td>Nausea</td>
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<td>Severity of dizziness</td>
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<td>Severity of itching</td>
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<td>.852</td>
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<td>.852</td>
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<tr>
<td>Severity of dizziness</td>
<td>.868</td>
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</tbody>
</table>
| Overall Cronbach’s Alpha = .86

Together = 58.9% variance
Results: Predictive Validity Regression on Satisfaction

- Neither age nor gender predicted levels of satisfaction
- Significant predictors for satisfaction were:
  - Higher pain relief (P<.001)
  - Less time spent in severe pain (P=.03)
  - Greater participation in pain treatment (P<.001)
  - Lower severity for adverse effects (measured by the total sum of the 4 adverse effects to obtain a severity level) (P=.004)
- Together these four variables explained 28.9% of the variance in the satisfaction outcome (F=34.5; df 6,489; P<0.001).

Research

A systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge.

PROMIS Patient Reported Outcome Measurement Information System

- NIH funded leading PRO and clinical investigators to develop a "psychometrically validated, dynamic system to measure PROs efficiently in study participants with a wide range of chronic diseases and demographic characteristics."
  1. PRO Measure Development Standards
  2. PRO Measures
  3. PRO Administration Software: "Assessment Center"

http://www.nihpromis.org/
PROMIS: Pain Intensity and Interference

<table>
<thead>
<tr>
<th>PROMIS: Pain Intensity</th>
<th>Not at all</th>
<th>A little bit</th>
<th>Somewhat</th>
<th>Quite a bit</th>
<th>Very much</th>
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</thead>
<tbody>
<tr>
<td>How much did pain interfer with your day-to-day activities?</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>How much did pain interfer with your mood or energy?</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>How much did pain interfer with your ability to participate in social activities?</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>How much did pain interfer with your household chores?</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

New Approach is Necessary

RCTs are insufficient and not always generalizable.
Registries can be used as a mechanism for standardized collection of data:
1. Create a database
2. Feedback to clinicians
3. Researchers
4. Or administrators
5. Use for QI, research, and policy/resource development

Introducing PAIN OUT
Improving pain-related post-operative outcomes
www.pain-out.eu
Clinicians, researchers, hospital administrators, policy makers can use the data to further knowledge about management of pain, e.g. assess development of chronic pain after surgery.

Immediate feedback & benchmarking is provided to clinicians online for QI.

Uses core dataset: POD 1

How is the data collected?
By use of 2 questionnaires

**OUTCOMES**
Filled in by the patient
Language?
The patient's local language
About 10 minutes to fill in.

**PROCESS**
Filled in by the surveyor
Data from patient’s medical/nursing file
About 15 – 20 minutes to fill in.

**PROs:** Based on APS-POQ-R includes pain and relief, interference activities, emotion, sleep, side effects, perceptions of care, use of nonpharm and hx of chronic pain

**Online Feedback**
Accountability:
Performance Measures

- Primary purpose public reporting (external accountability)
- Rate-based and reported as fractions or percentages of total number of eligible events
- Create market demand for systems with best performance scores (powerful drivers of healthcare choice)

Joint Commission Pain Standards

- Respect the patient’s right to pain management R1.01.01.01
- Comprehensive pain assessment consistent with scope of care & patient condition PC.01.02.07
- Provide patient education and training based on each patient’s needs and abilities. PC.02.03.01
- Educates all licensed independent practitioners on assessing and managing pain MS.03.01.03
- Monitor the patient’s physiological status, mental status, and pain level at a frequency and intensity consistent with the potential effect of the operative or other high risk procedure and/or the sedation or anesthesia administered PC.03.01.07
- Define, in writing, criteria that identify when additional, specialized, or more in-depth assessments are performed PC.01.02.01
- Orient staff on the assessment & management of pain HR.01.04.01
- Medication orders are clear and accurate MM.04.01.01

Specific Process Issues from Accreditation Surveys

- Documentation of assessment and reassessment
- Use of PRN range orders
- PCA-by-proxy
- Potential for opioid overuse and overdosing
- Leadership
Recommended Actions
Suggested by JC

- Appropriate education and training
  - Assessment and management of sedation risks
- Effective tools
  - Standardized, evidence-based tools
- Effective process
  - Monitoring policies, tracking and analyzing incidents
- Safe technology
  - Build red flags into e-prescribing systems

NDNQI National Database of Nursing Quality Indicators

- Nursing sensitive indicators
- Part of the Magnet™ Journey
- Pediatric Pain assessment, intervention, reassessment (AIR) cycle
- University of Utah INQRI study in adults
  - Pain intensity and relief
  - Nurse believed my pain
  - Had pain medicine available/ meds worked well
  - Nurse suggested nonpharm
  - Discussed side effects
  - Involved in decisions

HCAPHS Hospital Care Quality Information from the Consumer Perspective

- Centers for Medicare & Medicaid Services (CMS)
- Goal to empower consumers with quality of care information to make more informed decisions and stimulate QI
  - During this hospital stay, did you need medicine for pain? (yes/no)
  - During this hospital stay, how often was your pain well controlled? (never, sometimes, usually, always)
  - During this hospital stay, how often did the hospital staff do everything they could to help you with your pain? (never, sometimes, usually, always)

http://www.hcahpsonline.org/home.aspx
The Cost of Satisfaction

- US CMS and NCQA require public reporting of satisfaction
- Prospective cohort 2000-7; N = 51,946
- Satisfied patients had:
  - Lower odds of ED visit
  - Higher odds of inpatient admission
  - Greater total expenditures
  - Greater Rx drug expenditures
  - 26% greater mortality risk \([aHR] 1.26; 95\% CI, 1.05-1.5, P = .02\)


The Other Cost of Patient Satisfaction

Patient Satisfaction, Prescription Drug Abuse, and Potential Unintended Consequences

JAMA 2012;307(13):1377-78

Conclusions

- Core patient level outcomes: pain, functional interference (emotional and physical), side effects, and perceptions of care (participation and satisfaction)
- Feels like the middle years; building social networks between researchers and clinicians to obtain and better use data
- Standardization is needed
- Measurement needs to be integrated into workflow and clinical feasible
- Appreciate reciprocal relationships: research, evidence-based practice, and QI
Objectives

1. Debate the appropriateness of using
   - pain intensity scores,
   - opioid requirements,
   - opioid side effects, and
   - patient satisfaction as outcome measures in post-operative pain management research studies and quality improvement efforts.

2. Explore potential technologies for capturing post-operative pain management outcomes.
Patient Satisfaction

- The pain and recovery from the surgery was: less than greater than about what I was led to believe.
- My recovery back to school took: longer less than about what I was led to believe.
- At this time, I think the surgery to correct my pectus was worth the discomfort
  Yes  No

Opioid requirements

- Average Morphine equivalents (mg/hr)
- Average Hypnosis Morphine Equivalent (mg/hr)

Morphine Equivalents (mg/hr)

- Average Morphine Equivalents of Dilaudid (No Toradol)
- Average Morphine Equivalents of Morphine (No Toradol)
- Average Morphine Equivalents of Dilaudid with Toradol
- Average Morphine Equivalents of Morphine with Toradol

Opioids requirements

- Average Morphine equivalents (mg/hr)
- Average Hypnosis Morphine Equivalent (mg/hr)
Opioid requirements

Opioid side effects

• All but 3 patients reporting nausea
• Over half (5 self-hypnosis, 8 non-hypnosis) vomited during their hospital stay.
• Over half needed supplemental O2 in the first 12 hours after surgery. Then declined:
  – no patients in the self-hypnosis group
  – 4 patients in the non-hypnosis group needing O2 during the 49-60 hours after surgery interval.
• Almost half of the patients were discharged to home without having had a BM recorded in their medical record (4 self-hypnosis, 6 non-hypnosis).

Opioid side effects

• 240 occasions of PNCA for pain:
  – age 2.3 ± 1.7 yr of age and weight 11 ± 5 kg,
  – Treated a median of 4 (range 2-64) days
  – Maximum daily pain scores were < or =3/10 (objective pain scale) or < or =2/5 (objective or self-report pain scale) in more than 80% of all occasions of PNCA use.
  – 8% incidence of pruritus
  – 15% incidence of vomiting on the first day of treatment.
  – 9 (3.75%) children received naloxone, 4 (1.7%) for treatment of PNCA-related apnea or desaturation.

• Adding low-dose naloxone 0.25 mg/kg/hr decreased the incidence of pruritus from 77% to 20% and nausea from 70% to 35%.
• Naloxone doses of 1mg/kg/hr reduced incidence of side effect failure (intolerable, despite adjuvants) to < 10% Monitto, Kost-Byerly, White, Lee, Kost, Thompson, Yaster. Anesthesiology 2005; 102:953-8.
Addiction

Less than 1% of individuals treated for pain become addicted to opioids
(Marks & Sachar, 1973; Porter & Jick, 1980)

6-15% are addicted to drugs

Treatment admission rate doubled
(1992 to 2001)

ER visits related to opioid abuse 117%

ER visits related to opioid abuse
### Public Health Concern: Non-medical use of controlled substances

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<th>Lifetime</th>
<th>Past-Year</th>
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<tr>
<td>12-17 yrs</td>
<td>9.4%</td>
<td>6.5%</td>
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<tr>
<td>18-25 yrs</td>
<td>24.4%</td>
<td>12.0%</td>
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</table>

11-067 Adolescents' home pain management after laparoscopic appendectomy

Unexpected findings
**Unexpected findings**

**Patient diary**
- Saturday September 29
- 1 Percocet at 10:07 am
- 1 Percocet at 4:02 pm
- 3 Percocet missing! at 8:48

**eCap**
- Fri Sep 28, 2012 08:51 PM
- Sat Sep 29, 2012 10:07 AM
- Sat Sep 29, 2012 03:28 PM
- Sat Sep 29, 2012 04:04 PM
- Sat Sep 29, 2012 04:48 PM
- Sat Sep 29, 2012 06:51 PM
- Sun Sep 30, 2012 09:09 AM

**Pill count**

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<th>Left over pills</th>
<th>Rx opioid pills used</th>
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</table>

**Unexpected findings**

- State ID
- State Prescription Monitoring Program
  - For registration questions, please contact the Administrator at: (860) 713-6073 or DCP.Prescriptions@ct.gov
Is it the outcome or the patient?

IT'S ALL IN THE JEANS

Pain Management Documentation in the Age of the EMR: Analyzing One Hospital’s Records
Joanne G Samuels, PhD, RN, CNL
Associate Professor
University of New Hampshire

Objectives
- Discuss challenges to post-operative pain assessment data extraction from the electronic medical record.
- ASPMN’s efforts to standardize EMR nomenclature to facilitate quality benchmarking and multicentered post-operative pain research studies will be presented.
- Work to develop a value index for post-operative pain management efforts will be described and the utility of the index will be debated.
Introduction

- Pain management documentation (PMD) is a critical element of pain management care and required by the Joint Commission.
- PMD chronicles the pain assessment, treatment, and patient response.
- PMD is the chief data source for measuring the quality of pain care.

Landmark Pain Management Studies using chart review methods

- Marks and Sklar (1973) abstracted pharmacological intervention and patient complications to first discover pain’s under treatment.
- Ferrell and colleagues (1995) advanced pain management nursing science by offering researchers a record review methodology for systematically collecting and aggregating PMD.
- Titler and colleagues (2009) used medical record data as a measure of testing the effectiveness of a translational research practice intervention.

The Electronic Health Record

Structured and unstructured fields

Typically hospital staff are provided with templates to individualize
According to the CDC (2013), Meaningful use is built on 5 pillars:
- Improving quality, safety, efficiency, and reducing health disparities
- Engage patients and families in their health
- Improve care coordination
- Improve population and public health
- Ensure adequate privacy and security protection for personal health information

Record Review Methods

- Descriptive study design
- Setting: Three 200 bed NE community hospitals
- Record Review using three computer platforms
Computer platforms

- MEDITECH 5.6® implemented initially in May 2005 with 1 major upgrade.
- Cerner PowerChart® implemented in 2007
- MEDITECH 5.6.2® implemented in 2002 with a recent upgrade

Time Variant Data Collection

Key findings

- The repeated measures aspect of the data provided an opportunity to create research variable for hypothesis testing
- Difficult to piece together the patient’s story
- Inconsistent terminology and field structure would challenge cross organizational or national benchmarking
Key finding 1 – Variables identified

- Average and max NRS
- The standard deviation from the mean NRS provided a measure of variability
- Documentation intervals
- Documentation quantity looking at the number of entries
- The intercept and slope for pain resolution
- Patterns of Assessment/Intervention/Reassessment

PMD Episodes by Time of Day

Key finding 2 – The patient’s story
Key finding 3

- Proprietary platforms present differently
  - While assessment and intervention can present similarly, reassessment varies considerably, with much of it in unstructured fields

Discussion

- High volume of documentation, still with omissions and duplication.
- Number of entries/day are not associated with pain severity, however, PMD episode categories are associated with pain severity
- EMR data fields impeded interpretations of clinically relevant associations.

Conclusion and implications

- Improvements to streamline and consolidate PMD entries are required to allow for clinically interpretable output.
- Implications for EMR report construction
  - Care to allow the practice to drive the systems and not the system to drive the care ensuring that the information has the potential to impact outcomes
Implications for consumers of PDM

- Work collaboratively with information technology specialists in downloading reports.
- Consistent data collection forms or reports
- Call for a national pain management documentation terminology

Objectives

- Describe global efforts to improve quality in post-operative pain management.
- Debate the appropriateness of using a value index, pain intensity scores, opioid requirements, opioid side effects, patient satisfaction, and pain assessment process audits as outcome measures in post-operative pain management research studies and quality improvement efforts.
- Discuss the challenges of extracting data from the electronic medical record and describe ASPMN’s efforts to standardize EMR nomenclature, technological innovations for capturing data, and global efforts to improve post-operative pain management.

Discussion, Debate, and Questions?

Thank you