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Road Map for Opioid Management in the Inpatient Setting: A Structured Approach to Opioid Selection and Titration

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Abstract

Introduction: Effective pain management is a major challenge of medicine as patients with acute and chronic pain conditions require careful evaluation and treatment. Despite required pain management education in postgraduate training, effective pain management is often not achieved in the hospital setting. For example, the Accreditation Council for Graduate Medical Education in 2007 required internal medicine residencies to include instruction on pain management. However, studies have demonstrated a lack of pain management knowledge in trainees in pediatrics, neurology, internal medicine, and family practice. This includes a lack of basic skills in pain assessment, knowledge of narcotic pain medication pharmacology, and management of patients with pain at the end of life. **Methods:** We developed the Road Map for Opioid Management in the Inpatient Setting as an instructional method via a PowerPoint-based slide show to guide clinicians on the thought process for opioid selection and titration. We include opioid conversion cards, additional resources, questions for self-efficacy and knowledge pre- or postassessment, and a posttest. Our educational intervention was successful. **Results:** After initial training, over 60% of learners (i.e., residents, fellows, and other health care professionals) felt confident or extremely confident in each of the following: choosing an opioid for patients with renal failure, determining when to dilute naloxone for opioid reversal, converting fentanyl patch to fentanyl drip, and determining which pain scale to use for nonverbal patients with dementia. **Discussion:** Our instructional program is an organized and effective tool to provide education for opioid management to clinicians.

Keywords

Pain Management, House-Staff Education, Opioid Titration

Appendices

- A. Road Map Presentation .pptx
- B. Opioid Conversion Card .pdf
- C. Fentanyl Conversion Card .pdf
- D. Pre-Post Self-Efficacy.docx
- E. 10 Posttest Questions.docx
- F. Clinical Case Presentation .pptx
- G. SOAPP.pdf
- H. Opioid Risk Tool.pdf

All appendices are peer reviewed as integral parts of the Original Publication.

Educational Objectives

By the end of this learning session, participants will be able to:

1. Describe risk factors for excess sedation or respiratory depression related to opioid use.
2. Identify risk factors for opioid addiction and describe tools for assessment.
3. List pain assessment tools and identify the appropriate pain assessment tool for nonverbal patients with dementia.
4. Describe side effects of opioids and compare them to allergy to opioids.
5. Demonstrate how to initiate and titrate opioids for cancer pain, pain at the end of life, and acute pain based on various patient factors.
6. Identify which opioids are safest, which may be used with caution, and which are not recommended for use in renal or liver failure.
7. Describe indications for naloxone for opioid reversal including how and when to dilute naloxone
8. Identify nonopioid analgesics and nonpharmacologic pain management interventions.

Introduction

Health care professionals recognize that pain is complex and multidimensional. However, there is an urgent need to improve pain assessment and management skills among clinicians caring for seriously ill patients.

In spite of required pain management education in postgraduate training for residents, effective pain management is often not achieved in the hospital setting. To improve care, in 2007, the Accreditation Council for Graduate Medical Education required internal medicine residencies to include instruction on end-of-life care and pain management in their core conference series.¹ However, studies have demonstrated a lack of pain management knowledge in trainees in pediatrics,² neurology,³ internal medicine,^{4,5} and family practice.⁵ This includes a lack of basic skills in pain assessment, knowledge of narcotic pain medication pharmacology, and management of patients with pain at the end of life.^{6,7}

The Road Map for Opioid Management in the Inpatient Setting was created to assist clinicians with the decision making needed for opioid analgesic management. This road map serves as a guideline for management of acute pain by physicians and midlevel providers in hospitalized patients. However, many of the concepts can be applied to other health care settings (e.g., office-based or nursing home). Effective management includes assessing for risk factors for adverse reactions, drug selection based on renal or liver impairment, oral dose initiation, titration of dose based on pain level and opioid usage, management of continuous drips, converting fentanyl patch and intravenous drip, discarding fentanyl patches, and knowing where to obtain additional information or resources. We include information on nonopioid analgesics as well as nonpharmacologic pain management interventions. This framework is needed to help guide providers in understanding the decision-making steps required.

Research has shown that educational modules can be effective for training clinicians in pain management.⁸⁻¹⁰ This instructional module was initially conceived as part of a larger pain management educational initiative implemented in our institution.

Methods

The educational program can be provided in a large or small setting to improve knowledge about opioid pain management. Smaller groups of 12-15 learners may allow for greater discussion of patient cases in a workshop format. This presentation has been used with great success in our institution when presented to trainees and midlevel providers and can be used for any more advanced level of learners. This educational module is focused and directed so learners can follow the logical sequence of decision making and feel more confident with managing opioids. Successful implementation can be increased by personalization based on individual institutional resources (e.g., contact information for local palliative service, pain management service, or pharmacy).

Practical implementation is straightforward. A well-organized presentation should take approximately 25-30 minutes to review slides (Appendix A), preferably presented by a clinician with pain management experience. No additional materials are needed beyond the included resources; however, case presentations may be useful. We provide one case presentation on PowerPoint slides (Appendix F). Additional clinical scenarios submitted by the learners may be useful and meaningful for attendees, as they can learn how the presenter would manage the pain in that scenario. This can be done through a submission process in advance of the presentation or ad hoc during the presentation.

An Opioid Conversion Card (Appendix B), an information sheet including opioid conversion tables and suggestions for dose initiation and titration, and a Fentanyl Conversion Card (Appendix C), an information sheet describing fentanyl pharmacokinetics, indications for use, conversion from morphine, and suggested PRN dosing for patients on fentanyl patch, are included along with copies of the tools to evaluate risk of addiction, SOAPP¹¹ (Appendix G) and the Opioid Risk Tool (Appendix H). We also include self-efficacy assessments (Appendix D), which can be done via paper or embedded in the PowerPoint as part of an audience response system (ARS). These questions are shorter than the full posttest and can help the

learners assess their initial comfort level and presumably be more engaged during the course so they can improve their comfort level.

The 10-question knowledge-based posttest (Appendix E) can be done via paper or as an online test after the didactic session. Whether online or on paper, conducting the posttest within the session time is more likely to result in better response rates rather than expecting learners to find time after the session to complete the posttest. The knowledge assessments can also be conducted prior to the course to serve as a needs assessment and/or to provide baseline scores. Follow-up assessments of self-efficacy and knowledge could be conducted within a reasonable period (e.g., 3 months) to evaluate for knowledge retention.

Results

The largest group implementation using this educational module was a core competency lecture presentation for house staff in the hospital. We used an ARS for postsession self-efficacy evaluation and a posttest of knowledge on paper at the end of the session. There were approximately 65 attendees and we had 40 responses in the self-efficacy ARS and 48 completed posttests on paper. Learning outcome measures with postsession self-efficacy and knowledge assessment quiz revealed acquisition of knowledge and high perception of self-efficacy by participants after the session (see Table 1).

Table 1. Postsession Self-Efficacy Assessment (N = 40)

Question	Not at All Confident	Somewhat Confident	Neutral	Confident	Extremely Confident
To what extent are you confident in your ability to:					
Choose an opioid for a patient with renal failure	2%	23%	10%	40%	25%
Determine when to dilute naloxone for opioid reversal	4%	14%	10%	55%	17%
Convert fentanyl patch to fentanyl drip accounting for pharmacokinetics	19%	13%	5%	58%	5%
Determine which pain scale to use for a nonverbal patient with dementia	20%	10%	9%	43%	18%

There were 48 attendees completing the 10-item postsession knowledge quiz. Among these were 37 multidisciplinary house staff with the following distribution: PGY-1 = 11, PGY-2 = 13, PGY-3 = 1, PGY-4 = 6, PGY-5 = 4, and PGY-6 = 2. Excluding the quiz question on opioid risk with 43% of the attendees answering correctly, the range of correct answers ranged from 70% to 96% (see Table 2).

Table 2. Postsession Knowledge Assessment Results With Comments

Goal of the Question	Correct Answer	Comment
Time for fentanyl patch to be therapeutic	93.60%	
Use of naloxone in patients with chronic pain	70.80%	27% chose choice D, which was incorrect because respiratory rate criterion is under 8, not 8-12.
Use of Pain-AD Dementia Scale	77.10%	17% chose choice D, which was incorrect because Wong-Baker Faces Scale cannot be used for nonverbal patients with dementia as it is a self-reporting scale.
Use of the Opioid Risk Tool	43.50%	Wide distribution for wrong answers (A: 19.6%, C: 15.2%, D: 21.7%) demonstrated insufficient material/explanation had been provided in the educational module.
Proper use of long-acting opioids	80.40%	
Safer analgesics in renal failure	84.80%	
Avoid intramuscular route for opioid analgesics	95.70%	
Opioids that are NOT recommended in liver failure	63.80%	30% chose choice E, which was "all of the above" (including oxycodone). Oxycodone can be used in liver failure, but with a lower dose and longer time interval.
Routes of opioid administration	83.90%	
Opioid allergy vs. side effect	85.00%	

Analysis of a post hoc focus group provided very positive feedback. Learners reported appreciation of a resource that allowed them to follow the logical sequence of decision making in proper opioid management. Learners further expressed feeling more confident with managing opioids and pain management. They also greatly appreciated the access to resources and felt that the session was particularly useful because it provided the tools and guidelines for opioid management and did not require that they memorize all the material immediately to apply it for patient care.

Discussion

This educational program for opioid management provides a thoughtful road map for clinicians to use when prescribing and managing opioids. Its color-coding and structured titration guidelines help clinicians with tangible instructions for thought process and decision making. The additional resources include conversion tools that aid with practical application of the acquired knowledge. Learners reported that the educational module was effective and useful and requested copies of the PowerPoint so they could use it as a reference source in the future. Of note, we added additional information and explanation about the Opioid Risk Tool and Wong-Baker Faces Scale since it was evident from the postsession test results that the information presented was insufficient.

A well-rehearsed presentation is vital to effectively presenting the educational materials in this resource. An experienced session facilitator may edit or redesign content for local needs and practice. This resource has the intrinsic limitation of the need for pain management to be individualized for the patient; however, as a guide, it serves to direct the thought process of the clinician for the individual patient.

Future opportunities include small-group sessions where learners bring their own real-life cases to discuss. This would allow practical application of the learned material to cases that have clinical relevance to the medical care providers. Additionally, when this course is provided again, we might have a precourse self-efficacy series of questions as well. This would provide a comparison of pre- and postcourse assessments.

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