



# “As-Needed” Range Orders for Opioid Analgesics in the Management of Pain: A Consensus Statement of the American Society for Pain Management Nursing and the American Pain Society



*Debra J. Drew, MS, ACNS-BC (Retired), RN-BC (Retired),  
AP-PMN,\* Debra B. Gordon, RN, DNP, FAAN,<sup>†</sup>  
Bonnie Morgan, MA, RN-BC, CHPN, FPCN,<sup>‡</sup>  
and Renee C. B. Manworren, PhD, RN-BC, APRN, PCNS-BC,  
AP-PMN, FAAN<sup>§</sup>*

**Effective pain management requires careful titration of analgesics and evaluation of individual patient’s responses to treatment using valid and reliable pain and pain relief assessment tools, and evidence-based patient monitoring for adverse treatment effects. A registered nurse, competent in pain assessment and analgesic administration, can safely interpret and implement properly written “as-needed” or “PRN” range orders for analgesic medications. The American Society for Pain Management Nursing (ASPMN) and the American Pain Society (APS) support safe medication practices and the appropriate use of PRN range orders for opioid analgesics in the management of pain.**  
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*From the \*University of Minnesota Medical Center, Fairview, Minneapolis; <sup>†</sup>Anesthesiology & Pain Medicine University of Washington; <sup>‡</sup>Virginia G. Piper Cancer Care Network Chandler, AZ; <sup>§</sup>Posy and Fred Love Chair in Nursing Research, Director of Nursing Research and Professional Practice, Ann & Robert H. Lurie Children’s Hospital of Chicago, Associate Professor of Pediatrics, Northwestern University’s Feinberg School of Medicine.*

*E-mail: [drewmartin@comcast.net](mailto:drewmartin@comcast.net)*

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## BACKGROUND

Because there is such a wide variability in patient response to analgesics, as-needed (PRN) range orders for opioids (e.g., “morphine 2 to 6 mg IV every 2h PRN for pain” or “oxycodone 5-10 mg PO q 4 hrs. PRN pain”) are commonly used to provide flexibility in dosing to meet individual patient’s needs. Some

of the patient-specific factors influencing this variability include the individual's pain sensitivity, pain severity, pain tolerance, age, pharmacogenetic profile, renal and liver function, other comorbidities, and prior opioid exposure (opioid naivety or tolerance) (Pasero, Quinlan-Colwell, Rae, Broglio & Drew, 2016). Other influencing factors include drug kinetics and concurrent administration of sedating drugs. The Institute for Safe Medication Practices (ISMP) issued draft Guidelines for the Safe Communication of Electronic Medication Information that reinforce its earlier recommendation to allow only range orders with objective measures to determine the correct medication dose (ISMP, 2015). Objective measures for opioid administration that must be monitored to evaluate response to opioids include functional status, level of arousal (sedation level), respiratory status, and concurrent sedating medications, among others (Jarzyna et al., 2011; Pasero, 2014). Clear and thoughtful consideration of all these factors is necessary for safe and effective dosing. A review of current literature supports the need for individual initiation and titration of opioid dosing (Gordon, Pellino, Higgins, Pasero, & Murphy-Ende, 2008; Bruera & Paice, 2015). There is no evidence that administration of a specific drug at a specific dose will effectively reduce or relieve pain of a specific intensity regardless of whether pain is self-reported using a validated and developmentally appropriate pain assessment tool or a behavioral tool (Aubrun & Riou, 2004).

There are several myths regarding The Joint Commission (TJC) pain and medication management standards including that patients should be treated by an algorithm according to their pain score (Pasero, Quinlan-Colwell, Rae, Broglio & Drew, 2016). In fact, throughout its history, TJC has advocated for an individualized patient-centric approach that does not require zero pain. The standard requires that medication orders are clear and accurate. Organizations set their own policies and surveyors determine whether such policies have been established, and whether there is evidence that the organization's own policies are followed (The Joint Commission, 2018; The Joint Commission, 2017). Range orders enable necessary and safe adjustments in doses based on individual responses to treatment. To promote patient safety and reduce medication errors, it is critical that nurses, patients, pharmacists and physicians, share a common understanding of how to properly prescribe, interpret, and carry out PRN range orders. Because of the trepidation in ensuring consistent interpretation of range orders, one institution suggested the use of "rescue dose orders" as an

alternative to range orders (Yi, 2015). Their solution included order sets that allowed an additional analgesic that could be given after the peak period of the previous dose. One might argue that this approach is yet another form of range orders in that it allows for additional dosing of an analgesic based on patient outcome and nurse assessment.

## ETHICS

Health care professionals are obligated to comfort all patients and provide pain treatment to optimize patient comfort. The ethical principles of beneficence, nonmaleficence, justice, and autonomy underpin this obligation. Beneficence is defined as taking positive action to help others and the desire to do good; it is a core principle of patient advocacy (Beauchamp & Childress, 2009). Nonmaleficence is defined as the duty to do no harm. Justice is defined as fair treatment of individuals and equitable allocation of healthcare resources. Autonomy is the rights of self-determination (Beauchamp & Childress, 2009). Use of prn range opioid orders as part of a pain management plan is supported by these ethical principles (Pasero et al., 2016).

## RECOMMENDATIONS

### Prescribers

- Construct orders that contain a dosage range with a fixed time interval.
- Consider patient and drug characteristics including, but not limited to, type and intensity of pain, duration of pain, patient age, past exposure and prior response to analgesics (both pain relief and side effects such as sedation or decrease in respiratory function), comorbidities, end-organ function, concomitant administration of other drugs, pharmacogenetics and pharmacokinetics of the analgesic to be ordered.
- The pharmacokinetics of the opioid should be considered: absorption, bioavailability, protein binding, metabolism, excretion, half-life, and accumulation. In the pediatric and geriatric populations, be aware of specific considerations related to the pharmacokinetics of the opioid in those populations (e.g., older patients present with increased fat mass, decreased muscle mass, and decreased body water, which affects drug distribution) (Kaye, Baluch, & Scott, 2010).
- Prescribing a specific dose, based solely on a pain intensity score (e.g. numeric or word) obtained from a pain assessment tool (ie. self-reported pain intensity or observational tool) is not appropriate or safe. A subjective pain intensity score is just one of several factors that influence the type of medication and dose that a patient should receive (Pasero et al., 2016).

- Provide a dosage range that is adequate enough to permit appropriate and safe dose titration based on the patient's opioid naivety or tolerance.
- Avoid ranges that are too broad in scope. Limit opioid dose ranges to 2-3 times the lower dose (Coluzzi, Taylor, Pergolizzi, Mattia, Raffa, 2016). Ambiguous open-ended orders such as "titrate to comfort" are not acceptable.
- Avoid therapeutic duplications of PRN opioid analgesics consisting of more than one type of PRN opioid by the same route (e.g., concurrent availability of oral oxycodone and hydrocodone/acetaminophen and acetaminophen).
- If PRN opioids for different routes are ordered concurrently, clarify criteria for route (e.g., "Use oral route unless patient is NPO or vomiting").
- The dosing interval should be appropriate for the drug and route of administration, taking into account usual absorption and distribution characteristics, time to onset, time to peak effect, and duration of action.
- Evaluate orders for potential drug-drug interactions that may increase deleterious side effects (i.e., sedating anti-nausea medication, sedating muscle relaxers, sleeping medication, or benzodiazepines).

### Nurses

- Base decisions about the implementation of range orders on a thorough pain assessment and knowledge of the drug to be administered. Consider presence and risk for pain, pain intensity, pain location, cause of pain, temporal (time or pattern) characteristics of the pain, and the patient's functional status and previous response to this or other analgesics (e.g., pain relief, side effects, and effect on function).
- Use pain assessment tools that are valid and reliable, individualized to the patient, and used consistently for that individual (Herr, Coyne, McCaffery, Manworren & Merkel, 2011). In the pediatric population, use an assessment tool that is developmentally appropriate for the patient. In the cognitively impaired patient, use appropriate behavioral assessments tools.
- The pharmacokinetics of the opioid should be considered: absorption, bioavailability, protein binding, metabolism, excretion, half-life, and accumulation. In the pediatric and geriatric populations, be aware of specific considerations related to the pharmacokinetics of the opioid in those populations (e.g., CYP2D6 protein concentrations, crucial to drug metabolism, are less than 5% of adult values at birth. Infants achieve 92% of the adult CYP2D6 activity by one year of age, independent of gestational age at birth. CYP3A4 approaches 72% of adult activity levels by one year of age (Johnson, Tucker, & Rostami-Hedjegan, 2008).
- Avoid administration of partial doses at more frequent intervals so as to not under dose a patient with small, frequent, ineffective doses from within a range (i.e., giving oxycodone 10 mg every 2 hours when the order reads oxycodone 10 to 20 mg every 3 hours PRN). More

frequent intervals may lead to overdosing if the half-life of the medication is longer than the dosing frequency: the drug may accumulate with frequent repeated dosing. If partial doses are administered upon initiation of therapy

- Wait until peak effect of the first dose has been reached before giving a subsequent dose.
- Avoid making a patient wait a full time interval after giving an additional partial dose within the allowed range.
- Tell the patient the name of the drug and the dose to be administered.
- Explain to the patient and/or the patient's representative the assessment and monitoring process when giving opioids.
- Communicate the rationale for frequent monitoring of pain, including that it may be necessary to awaken the patient to assess the effects of sedating opioids. Instruct the patient and family to report any negative side effects such as excessive sleepiness or breathing difficulties that may be related to medication (CMS, 2014, p.3).
- Evaluate the patient's response to the analgesic dose and dosing interval.
- Document the patient's response to dose and dosing interval.
- Communicate pain experience and effectiveness of pain reduction interventions when handing patient over to the next shift and/or provider.
- Develop policies and processes that enhance patient comfort, ensure medication safety, and provide for flexible interpretation of PRN range orders to meet individualized patient care needs.

### Institutions

- Ensure that appropriate range orders for analgesics are prescribed.
- Assess competency of nursing staff to interpret and implement range orders for analgesics.
- Provide ongoing education of safe medication practices for nurses, prescribers and pharmacists. Consider education plans that address clinicians' responsibilities, knowledge deficiencies, attitudes and beliefs (Yin, Tse & Wong, 2015).
- Ensure the implementation of policies and processes that provide safe, effective dosing of analgesics.

### FURTHER RESEARCH

There is opportunity for continued research to better understand how the prescribing and interpreting of PRN range orders for opioids can affect pain care for patients. Areas of study could include the use of PRN range orders for opioids and pain sensitivity, analgesic metabolism, patient variability, and answer research questions such as:

- Does a common interpretation and standard implementation of range orders within an institution improve

patient outcomes including patient safety and improved pain control?

- Does an opioid range order approach result in fewer adverse drug events, and better pain control than a fixed dose PRN approach?

## SUMMARY

The treatment of pain requires individual titration of analgesics by a clinician competent in pain

assessment, analgesic administration, and evaluation of response to treatment. PRN range orders for analgesics must be written in accordance with evidence-based clinical practice guidelines.

Institutions should allow PRN range orders for opioid analgesics to meet the mandate for safe and effective pain management. Processes are required to ensure staff competency in the writing, interpretation, and implementation of these orders. Safety and quality of pain management practices must be monitored.

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