

PAIN TOPICS

A Case of Finding the Right Opioid Dose

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Question:

My postoperative patient was a 21-year-old male receiving 2 Percocet every 4 hours but reporting pain every 3 hours. Our service decided to order oxycodone 5mg po q4 hours for breakthrough pain instead of increasing the frequency or the dose. In this situation, should we change the drug, dose, or frequency?

Answering a Question with More Questions:

As with many things, "it all depends." There are several variables to consider.

1. What was the patient actually receiving?
 - Was the patient on the original Percocet dosage strength (5 mg oxycodone + 325 mg acetaminophen)? Percocet now comes in multiple dosage strengths, so calculating the patient's actual use requires knowing the tablet strength he is receiving.
2. Was the dose scheduled around the clock or PRN?
 - In the early post-op period scheduled dosing usually makes more sense than PRN—the patient doesn't have to wait to have pain in order to have an analgesic.
3. How long has he been taking the Percocet?
 - It will take at least several hours to reach a steady state (consistent serum level) of opioid. The combination of around-the-clock dosing and the achievement of a steady state dramatically reduces the peaks and valleys of analgesia that are experienced by patients on PRN-only dosing.
4. How frequently and how close to the scheduled dose does he take the breakthrough dose?
5. Was he asking for it as soon as he needed it?
6. Was there a delay in getting it to him?
7. What is his medication history? Has he used successfully use oxycodone/acetaminophen in the past?

Discussion:

Assuming that other reasons (infection, internal bleeding) for ineffective pain relief have been ruled out, we can look at potential reasons that the patient requests analgesics at 3 hours post-dose. It is conceivable he is that unusual person who metabolizes the opioid a little faster than average and needs it q3 rather than q4 hours. If so, this wasn't really "breakthrough pain," it was "end of dose failure." End of dose failure can occur in either the case of a patient who metabolizes a little faster than most, or in a patient who is right on the edge of needing a higher dose, so that when the peak effect begins to diminish he experiences pain earlier than otherwise expected. Increasing the dose by either giving a higher dose at the same interval or the same dose at a shorter interval should help. It is usually more convenient for both patient and caregiver to increase the dose rather than decrease the interval. Finally, we should recognize that the standard dosing intervals are based on averages and we should tailor our treatments to the patient's needs—except for the burden of frequent dosing, it is not unreasonable to consider changing the dosing interval.

Occasionally there are patients for whom a specific opioid doesn't seem to be effective. However, changing from one opioid analgesic to another because it "isn't working" is usually the wrong strategy. In most cases the dose has not been escalated sufficiently, and thus there has not been an adequate trial of the selected agent. Plain oxycodone (no acetaminophen) is the appropriate drug for breakthrough pain in this case. It can be used to titrate to the appropriate dose (so if he needed it between every scheduled dose, for example, the scheduled dose should be increased). Using it PRN to make up for end of dose failure complicates the regimen and requires the patient to have pain and request analgesia, rather than to maintain the patient at a relative level of comfort, the real goal of pain management. Obviously, it also increases the workload on the nurse without the payoff of improved analgesia for the patient.

Ordering a breakthrough dose at a q4 interval doesn't make much sense when the scheduled dose is also q4. A true breakthrough dose should be more freely available: q1 or q2, reflecting the peak analgesic effect of approximately one hour for oral oxycodone. It should also be given without regard to the scheduled dose. In other words, if the patient requests it, he should receive it even if he is also due for the scheduled dose or had a scheduled dose 30 minutes ago.

Final Thought

Remember that combination analgesics by definition contain more than one drug. The maximum daily dose of the tablet is generally governed by the toxicity of only one of them. In this case, the patient is already taking 2 Percocet every four hours for a total daily dose of 3900 mg of acetaminophen, the recommended daily limit for this drug. The prescriber presumably took this into consideration when ordering oxycodone rather than additional Percocet. The acetaminophen probably plays a significant role in the regimen, so if the decision is made to increase the dose, the new order might logically be 15 mg oxycodone q4 hours plus acetaminophen 650 mg q4 hours.