

ISMP Canada HYDROmorphine Knowledge Assessment Survey

Knowledge Assessment Questions

1. In an equipotent dose, HYDROmorphine is more potent than morphine.
 - True
 - False
 - Unsure

2. HYDROmorphine can be given to a patient who has had a previous adverse reaction to morphine (e.g., nausea, vomiting, hallucinations).
 - True
 - False
 - Unsure

3. HYDROmorphine is often used in the palliative care setting, but may also be used for acute pain.
 - True
 - False
 - Unsure

4. The difference between morphine and HYDROmorphine is:
 - a) Morphine is a brand name for HYDROmorphine
 - b) HYDROmorphine is a brand name for morphine
 - c) They are two completely different medications with different uses
 - d) Both are opioid medications used to treat pain but are dosed differently
 - e) HYDROmorphine is “watered-down” morphine

5. When considering the difference between HYDROmorphine and morphine, which of the following ratios is MOST appropriate?

- a) HYDROmorphine 1 mg \approx morphine 1 mg (i.e., they are the same)
- b) HYDROmorphine 1 mg \approx morphine 2 mg (i.e., HYDROmorphine is stronger)
- c) HYDROmorphine 1 mg \approx morphine 5 mg (i.e., HYDROmorphine is stronger)
- d) HYDROmorphine 2 mg \approx morphine 1 mg (i.e., morphine is stronger)
- e) HYDROmorphine 5 mg \approx morphine 1 mg (i.e., morphine is stronger)

6. What is an appropriate ORAL starting dose of HYDROmorphine for an otherwise healthy adult patient who has not received any opioid medications in the previous month?

- a) HYDROmorphine 1-2 mg PO q4h PRN
- b) HYDROmorphine 5-10 mg PO q4h PRN
- c) HYDROmorphine 10-20 mg PO q4h PRN
- d) Any of the above
- e) None of the above

7. What is an appropriate SUBCUTANEOUS starting dose of HYDROmorphine for an otherwise healthy adult patient who has not received any opioid medications in the previous month?

- a) HYDROmorphine 0.5-1 mg subcutaneously q4h PRN
- b) HYDROmorphine 2-5 mg subcutaneously q4h PRN
- c) HYDROmorphine 5-10 mg subcutaneously q4h PRN
- d) Any of the above
- e) None of the above

8. Which of the following are sign(s) of HYDROmorphine overdose?

- a) Constipation
- b) Nausea and vomiting
- c) Somnolence and decreased respiratory rate
- d) Extreme pain
- e) All of the above

9. Which of the following patients would you consider to be opioid tolerant?

- a) A patient who has been receiving a fentanyl patch 25 mcg/hour, changed q3days for 3 months
- b) A patient who filled a prescription for Tylenol No. 3, 1 tab q4h PRN, for leg pain two weeks ago (and who uses one or two tablets per day)
- c) A patient who has been on long-acting morphine 60 mg q12h for 2 weeks
- d) a and c
- e) All of the above

10. Naloxone has been administered to a patient to treat a HYDROmorphone overdose. Which of the statements regarding naloxone is TRUE?

- a) Increased sweating is a sign that the naloxone is working well.
- b) If too much immediate-release HYDROmorphone was given, repeat doses of naloxone may be required for up to 5 hours after administration.
- c) If too much long-acting HYDROmorphone was given, you should monitor the patient for 5 hours after the naloxone was given.
- d) In monitoring a patient who has received naloxone, pain as a result of reversing the analgesic effect of hydromorphone is your primary concern.

11. For each of the following situations, indicate if the starting dose of HYDROmorphone should be higher, lower, or the same for an otherwise healthy adult patient (assume that the patient is opioid naïve):

| | Higher | Lower | Same |
|---|--------------------------|--------------------------|--------------------------|
| Obese patients | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Patients with COPD | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Patients with obstructive sleep apnea | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Patient also receiving a benzodiazepine (e.g., diazepam, lorazepam) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Elderly patients | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

12. A patient has been receiving 2 mg of oral HYDROmorphine consistently every 4 hours for pain, with good effect. She has been vomiting and cannot keep oral medication down. What would be the MOST appropriate subcutaneous dose for her at this time?

- a) HYDROmorphine 0.5 mg subcutaneously q4h
- b) HYDROmorphine 1 mg subcutaneously q4h
- c) HYDROmorphine 2 mg subcutaneously q4h
- d) HYDROmorphine 4 mg subcutaneously q4h

13. A newly admitted patient has an order for HYDROmorphine 9 mg PO q12h, and the next dose is due now. The unit inventory includes HYDROmorphine 1 mg and 2 mg tablets, and HYDROmorphine controlled-release 3 mg capsules. The patient's home medications are not available, and he is unsure what he takes at home. The appropriate action at this time is to:

- a) Give HYDROmorphine 9 mg (using a combination of 1 mg and 2 mg tablets)
- b) Give HYDROmorphine CR 9 mg (3 × 3 mg capsules)
- c) Contact the pharmacy to obtain a more appropriate dosage form
- d) Contact the prescriber to clarify if she intended the immediate-release or the controlled-release product

14. A pediatric patient has been ordered 400 mcg of HYDROmorphine IV and you have 1 mL vials of HYDROmorphine 2 mg/mL available to you. What volume of HYDROmorphine 2 mg/mL contains the appropriate dose?

- a) 200 mL
- b) 20 mL
- c) 2 mL
- d) 0.2 mL
- e) 0.02 mL

15. A patient has an order for Hydromorph Contin 6 mg orally q12h (1000h and 2200h) and Dilaudid 2 mg q4h prn for breakthrough pain. At 1000h, 6 mg of HYDROmorphine immediate-release was administered to the patient. What type of clinical response could you expect?

- a) Appropriate pain control (provided the prescriber got the dose right)
- b) A decrease in level of consciousness and respiratory rate
- c) A report of ongoing pain in the afternoon
- d) An immediate increase in pain
- e) b and c

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Answers

1. False. Equipotent doses should be equally effective. Another way of expressing “equipotent” is “equianalgesic”.
2. True. Patients who have experienced adverse reactions or have demonstrated an intolerance to morphine that is not a true allergy may be safely given HYDROmorphine.
3. True. Many practitioners who rarely use HYDROmorphine may still see HYDROmorphine as linked to “cancer pain” or other palliative care but it can be used for moderate to severe pain in any setting. It is often also the opioid of choice in patients with compromised renal or hepatic function.
4. The answer is d). The purpose of this question was to identify if there are practitioners who are confused by the similarity in drug names and recognize that morphine and HYDROmorphine are two different drugs but are both opioid analgesics.
5. The answer is c). The purpose of this question was to determine if practitioners recognize that HYDROmorphine is significantly more potent than morphine. It is acknowledged that the “conversion ratio” is anywhere between 1:4 and 1:9; hence the wording of the question as “most appropriate”.
6. The answer is a). The purpose of this question was to identify if practitioners can distinguish between a usual morphine starting oral dose (5 mg) and a usual HYDROmorphine starting oral dose (usually 0.5-2 mg for adults). The choice of a) also takes into consideration the opioid status (naïve) of the patient.
7. The answer is a). The purpose of this question is to determine if practitioners can differentiate usual starting doses of HYDROmorphine from morphine starting doses, as well as to assess the understanding the subcutaneous dosing is more potent than oral. The choice of a) also takes into consideration the opioid status (naïve) of the patient.
8. The answer is c). The purpose of the question is to identify if practitioners can differentiate between signs of side effects (answers – a, b) and under-dosing (answer – d) versus signs of overdose.
9. The answer is d). The purpose of this question is to determine if practitioners can recognize the dosing regimen (both dose and frequency) required to produce opioid tolerance. Although the dosage regimen in b) is sufficient to induce opioid tolerance, the actual use was insufficient to do so.

10. The answer is b). The purpose of this question is to determine if practitioners understand that naloxone has a shorter duration of action than HYDROmorphine. Naloxone administered IV has a duration of action of 20-90 minutes; when administered IM, its duration of action is 6-120 minutes. HYDROmorphine immediate release tablets have a duration of action of 4-5 hours; while the long acting formulation has a duration of action of 8-12 hours. The other purpose is to determine if practitioners recognize that seating is a side effect and not a marker of efficacy of HYDROmorphine. Answer c) is incorrect as long acting HYDROmorphine may require repeated naloxone administration and monitoring for more than 12 hours.
11. The answer to all of the options would be “lower”. “Same” is also acceptable as a correct answer for obesity; obesity is often linked with sleep apnea, which would require a reduction in dose of HYDROmorphine. However, if no concomitant sleep apnea is present, the dose could remain the same. The other purpose of this question is to assess if practitioners recognize the impact of comorbidities/ concomitant medications on dosing of HYDROmorphine.
12. The answer could be a) or b). The purpose of this question is to assess if practitioners recognize that parenteral HYDROmorphine is more potent than oral. The commonly accepted conversion factor of oral to subcutaneous dosage formulations of HYDROmorphine varies from 4:1 to 2:1; therefore a 2 mg dose of oral HYDROmorphine could be equivalent to 0.5-1mg of the subcutaneous dose.
13. The best answer is d). The purpose of this question is to assess if practitioners recognize that a q12h frequency is not an appropriate dosing interval for immediate release HYDROmorphine. It is recognized that some pharmacists may have chosen b) based on organization-specific policies that allow pharmacists to dispense an alternative product accompanied by a clarification citing their rationale. However, the safest choice would be d).
14. The answer is d). The purpose of this question is to assess the calculation skills of the practitioner; although the question involves paediatric dosing, the intent is not to assess knowledge of correct doses of HYDROmorphine for paediatric patients.

The math is:

- Understanding that 400 mcg= 0.4 mg
- Doing the calculation:

$$\frac{2 \text{ mg}}{1 \text{ mL}} = \frac{0.4 \text{ mg}}{X \text{ mL}}$$

$$X = (0.4 \times 1 \text{ mL}) \text{ divided by } 2 \text{ mg}$$

$$X = 0.2 \text{ mL}$$

15. The answer is e). The patient would experience both a decreased level of consciousness and respiratory rate, as well as ongoing pain in the afternoon. The purpose of this question is to assess whether the practitioner can identify the difference in duration of action and effect between a long acting opioid such as Hydromorph Contin® (long acting HYDROmorphine) and

immediate release HYDROmorphone. The question also tests whether practitioners recognize the difference in immediate effect from an immediate release product versus the long acting form. Lasting the question assesses the knowledge that Dilaudid® is an immediate release form of HYDROmorphone.

The patient was intended to receive the long acting formulation of HYDROmorphone 6 mg, which would be released slowly over a period of 8-12 hours. The patient also had an order for 2 mg of immediate release HYDROmorphone, ordered as Dilaudid®. Administration of 6 mg of an immediate release formulation would provide release of 3 times the usual breakthrough dose, resulting in potentially toxic side effects of a decreased level of consciousness and respiratory rate, as well as a report of pain later in the day. The immediate release HYDROmorphone has a duration of action of 4-5 hours and would not have provided sustained analgesia much beyond 1400h.