



## **Report to Health Canada**

# ***Hydromorphone Knowledge Assessment Survey Results***

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Institute for Safe Medication Practices Canada  
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*A Key Partner in the Canadian Medication Incident Reporting and Prevention System  
Un partenaire clé du Système canadien de déclaration et de prévention des incidents médicamenteux*

**The Institute for Safe Medication Practices Canada (ISMP Canada)** is an independent national not-for-profit agency committed to the advancement of medication safety in all healthcare settings. ISMP Canada works collaboratively with the health care community, regulatory agencies and policy makers, provincial, national and international patient safety organizations, the pharmaceutical industry and the public to promote safe medication practices.

ISMP Canada's mandate includes collection, review and analysis of medication incident and near-miss reports, identifying contributing factors and causes and making recommendations for the prevention of harmful medication incidents. Information on safe medication practices for knowledge translation is published and disseminated.

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## Table of Contents

<b>Executive Summary.....</b>	<b>5</b>
<b>1. Background and Understanding of Project .....</b>	<b>13</b>
<b>2. Objectives and Scope .....</b>	<b>15</b>
<b>3. Methodology .....</b>	<b>17</b>
<b>4. Findings.....</b>	<b>27</b>
<b>5. Recommendations.....</b>	<b>43</b>
<b>6. Summary.....</b>	<b>45</b>
<b>7. Appendices.....</b>	<b>47</b>
Appendix I: HYDROmorphone Knowledge Assessment Survey - English	49
Appendix II: Sondage d'évaluation de connaissances de l'HYDROmorphone - en français	57
Appendix III: HYDROmorphone Knowledge Assessment Survey Answer Key – English	65
Appendix IV: La clé de réponse du sondage d'évaluation de connaissances liés à l'HYDROmorphone - en français	73
Appendix V: Summary of Survey Responses	81
Appendix VI: HYDROmorphone Knowledge Assessment Survey Categories	87
Appendix VII: HYDROmorphone Discovering What We Don't Know – Webinar Slides – English	91
Appendix VIII: HYDROmorphone: Découvrir ce dont on ne sait pas – diapositives du webinaire - en français	97

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## ***Report to Health Canada***

### ***HYDROmorphone Knowledge Assessment Survey Results***

#### ***Executive Summary***

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##### **Background and Introduction**

ISMP Canada received funding from Health Canada in December 2011 to implement a project that would enable a better understanding of the significance of knowledge deficit among healthcare professionals as a factor contributing to medication incidents involving HYDROmorphone. The objectives of the project were to:

1. Conduct an assessment of knowledge related to the use and administration of HYDROmorphone among physicians, nurses and pharmacists to establish the magnitude of the issue of knowledge deficit.
2. Provide recommendations and possible interventions to address knowledge deficit issues related to the safe use of HYDROmorphone

A Project Team was organized consisting of three pharmacists and one nurse; two of the team members were students completing their rotations with ISMP Canada. The Team enlisted the support of a number of expert advisors with knowledge and expertise in the area of pain management and experience with the use of HYDROmorphone and other opioids. Research on the topic was conducted, including consultation with organizations within and outside of Canada who were involved in similar initiatives.

##### **Webinar**

An informational webinar was developed and presented nationally. The webinar was offered in both English and French, and made available to all health care organizations and individuals in Canada at no charge through the project grant. The webinar was advertised through the ISMP Canada Safety Bulletin distribution list and on the ISMP Canada website. The webinar content included an overview of the types of HYDROmorphone-related incidents reported to ISMP Canada, some of the identified contributing factors to errors involving HYDROmorphone, and communicated the purpose of the ISMP Canada knowledge assessment survey as well as how individual practice sites and practitioners could participate. A resounding 480 sites registered for the English language webinar and

307<sup>1</sup> participants were logged by the system. A poll conducted during the webinar asking attendees to indicate the number of individuals attending in addition to themselves indicated a total of 734 participants. The actual number is likely higher as the poll was only completed by 195 participants. Attendance records showed participation from every province and from the professional disciplines of physicians, nurses, pharmacists, pharmacy technicians and quality and risk personnel. Informal feedback indicated participants perceived the webinar as valuable. For the French language webinar, 31 participating sites were logged by the system, with a total of 98 attendees reported. As with the English webinar, the total number of participants is likely higher, since only 5 of the 31 sites responded to the poll. Participants for the French webinar included clinicians, managers, clinical specialists, quality/ risk specialists and others.

### **The Knowledge Assessment Survey**

Immediately after the webinar, a knowledge assessment survey developed by the Project Team, supported by the expert advisors, and field tested by nursing units in a regional health authority, was posted for completion using the on-line administrative tool, SurveyMonkey<sup>TM</sup>. The knowledge assessment survey examined knowledge in the areas of understanding the potency of HYDROmorphone relative to morphine, conversion factors of HYDROmorphone to morphine using both oral and parenteral dosage forms, usual starting doses of HYDROmorphone (both oral and parenteral), differences between controlled or sustained release and immediate release dosage forms, recognition of opioid toxicity versus side effects, recognition and consideration of opioid tolerance in dosing of HYDROmorphone, and the impact of co-morbidities and/or concomitant drug therapy. The survey was made available in both English and French.

The English knowledge assessment survey (see Appendix I) was posted on-line February 9, 2012 and remained active until March 4, 2012. The French knowledge assessment survey (see Appendix II) was posted February 16, 2012 and remained active until March 4, 2012. The survey was comprised of 10 demographics related questions and 15 knowledge assessment questions. One knowledge assessment question had 4 parts; hence a total of 19 knowledge assessment questions were included in the survey. One additional question regarding the frequency of use of HYDROmorphone was also included. Appendices III and IV provide the questions, answers and the specific area of knowledge examined by each question in English and French, respectively.

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<sup>1</sup> It was anticipated that there would be a certain number of “no shows” for a complimentary webinar (typically approximately 10%); however there was also a discrepancy between the number of participants counted at the time of the webinar (430) and the number actually registered by the system (307). ISMP Canada has identified discrepancies in attendee numbers for other webinars since a recent upgrade to the webinar system. An additional factor in the discrepancy for the HYDROmorphone webinar may have been the large number of sites attempting to log into the webinar at the same time.

A total of 4399 respondents completed part or all of the survey; this included 77 respondents who completed the French survey. 3476 respondents completed all or most of the knowledge assessment questions. There was representation from every province and territory in terms of respondents who completed all or most of the knowledge assessment survey questions.

Respondents who completed some or all of the demographics questions and some or all of the knowledge assessment questions included individuals from the primary health care disciplines involved in the prescribing, dispensing, preparation, administration, and/or monitoring of HYDROmorphone. The total number of respondents from nursing was 2783, pharmacy 1188, and medicine 323. 105 respondents indicated their primary role was “other”; respondents within this group were extremely varied and included individuals from maintenance, materiel management, occupational therapy, social work, paramedic services etc.

The overall results for the 3476 respondents who answered some or all of the knowledge assessment questions were as follows:

Nursing		Pharmacy		Medicine		Other		Total	
Number	Percent with correct answer	Number	Percent with correct answer	Number	Percent with correct answer	Number	Percent with correct answer	Number	Percent with correct answer
2169	72.51%	968	78.80%	299	81.71%	40	65.60%	3476	74.97%

**Table A: Overall Results by Discipline**

Responses to each question by discipline are provided in Appendix V.

## Key Findings

To assess the magnitude of knowledge deficit as it relates to HYDROmorphone use, the knowledge assessment questions were grouped into six categories: pharmacology, indication, adverse effects, dosing, difference, and calculations. See Appendix VI for categorization of questions.

The greatest area of knowledge deficit appeared to be in the **pharmacology** area and was represented in responses from all disciplines. This area examined knowledge of differences in onset and duration of action between sustained release and immediate/regular release formulations, monitoring based on duration of action, and relationship between opioids and rescue agents. Both questions #10 and #15 focused on the ability to determine the duration of action of long acting and immediate release HYDROmorphone formulations.

Question #10 additionally examined understanding of the duration of action of naloxone in relation to the durations of action of long acting and immediate release HYDROmorphine and how this impacts administration of naloxone (the reversal agent) and subsequent monitoring of the patient.

The second most common area of knowledge deficit appeared to be related to conducting **mathematical calculations** by respondents within in the nursing discipline. Here the ability to do mathematical calculations relevant to opioid drug products and determination of dose to be administered was examined.

**Dosing** type questions examined knowledge of starting doses of both HYDROmorphine and morphine, conversion factors between the two drugs, oral versus parenteral dose conversions, doses required to produce tolerance, and impact of concomitant drug therapies or disease states on HYDROmorphine dosing. Within the dosing category of questions, the following were identified as greater knowledge deficits within the various disciplines as listed:

- ability to identify opioid tolerance - all disciplines
- recognition that obese patients do not require higher doses - all disciplines
- recognition that COPD patients do not require the same doses as those without COPD – all disciplines
- recognition that patients on a benzodiazepine do not require higher or same doses as those not on a benzodiazepine – nursing and pharmacy
- recognition that the elderly do not require the same doses as younger patients – nursing and pharmacy
- ability to convert oral dose of HYDROmorphine to equi-analgesic parenteral dose of HYDROmorphine – nursing

The **adverse effects** category examined knowledge of side effects, toxicity, and overdose. Within the adverse effects category, respondents across all disciplines were not able to discern that an adverse effect, or predictable side effect, of morphine would not preclude treatment with HYDROmorphine. Respondents from medicine scored lowest in recognizing signs of HYDROmorphine overdose.

The **difference** category examined the ability to distinguish differences between HYDROmorphine and morphine with reference to potency and drug names. While the majority of respondents correctly identified that HYDROmorphine 1 mg is approximately equal to 5 mg of morphine, that selection may have been influenced by similar information presented during the webinar. There is a concerning number of respondents in every discipline who demonstrated knowledge deficit in differentiating between morphine and HYDROmorphine, and provided answers which indicated they believe both drugs are the same.



There did not appear to be a knowledge deficit in recognizing **indications** for HYDROmorphine.

Several questions were analyzed to determine if there was any relationship between selection of the correct answer and the length of practice and/or area of practice. In most cases, there was no clear relationship with either factor although there was a slight difference regarding the relationship to area of practice; more incorrect responses were received from respondents who worked in long term care. Although one might anticipate that this group used HYDROmorphine less frequently, this was not the case; the majority of respondents from long term care reported using HYDROmorphine more frequently than morphine or used it exclusively.

### **Aggregate Analysis**

A parallel aggregate analysis of the relationship between HYDROmorphine incidents and knowledge deficit is underway by ISMP Canada. The aggregate analysis was not part of the HYDROmorphine project; however, it helped to confirm key findings and inform recommendations from the knowledge assessment survey. Two key areas of knowledge deficit have been identified in the aggregate analysis, related to: 1) the pharmacological and pharmaceutical properties of HYDROmorphine, and 2) the HYDROmorphine medication use process.

### **Recommendations**

The following actions are suggested to be undertaken by ISMP Canada to assist healthcare facilities and individual practitioners to improve the areas of knowledge deficit identified through the project:

1. Develop and publish an ISMP Canada bulletin to share the learning from this project.
2. Present a follow up webinar to report the findings of the knowledge assessment survey and the recommendations.
3. Update the knowledge assessment survey to include learning from the project.
4. Expand the information available on the ISMP Canada website related to safe use of opioids to include a dedicated HYDROmorphine page. Include on the webpage:
  - a. Updated knowledge assessment survey, in French and English, with the answer key
  - b. ISMP Canada Safety Bulletin on the project

- c. Other information to support safe use of opioids (e.g., references to pain management guidelines, equi-analgesic charts developed/ adopted by credible Canadian sources)
5. Consult with experts on innovative strategies to decrease potential for errors related to HYDROMorphone, including those related to knowledge deficits.
6. Provide results of the survey to academia of nursing, pharmacy and medicine for their review of the knowledge deficits identified (e.g., via expanded distribution of the ISMP Canada Safety Bulletin) to assist educators in identifying potential enhancements to existing curricula for each discipline.
7. Encourage facilities/ organizations/ regional health authorities to:
  - a. Use the knowledge assessment survey as a teaching tool for their staff;
  - b. Review the knowledge deficits identified from the survey for the purpose of enhancing orientation, refresher courses, policies and procedures, and other resource information addressing the use of HYDROMorphone and other opioids; and
  - c. Develop and implement tables of usual starting doses and equi-analgesic conversion tables for oral and parenteral HYDROMorphone and other opioids.
  - d. Develop and implement protocols for dosing and monitoring patients receiving reversal agents such as naloxone for overdose of immediate release and long acting HYDROMorphone and other opioids.
  - e. Develop and implement a process of independent verification for calculations required to administer HYDROMorphone and other opioids.

### **Incidental Findings: Project Learning**

The following were identified from the HYDROMorphone Knowledge Assessment and Intervention Project undertaking and will serve to improve future projects:

- The survey tool used (SurveyMonkey<sup>TM</sup>) could not be accessed by some participants due to organizational firewalls and did not provide flexibility in terms of data management.
- Additional questions were identified on completion of the survey that would have provided valuable information in interpreting the results
- On completion of the survey, it was identified that not all questions could be answered easily by all respondents.

## Limitations of the Project

This survey cannot define the state of knowledge deficit regarding the prescribing, dispensing, preparation, administration and/or monitoring of HYDROmorphine in Canada. The survey was voluntary in nature and does not represent a scientifically derived number of health care providers working in Canadian facilities or organizations. Sample sizes are larger for nursing and pharmacy respondents than for medicine respondents.

## Summary

ISMP Canada and the Project Team were extremely pleased with the national response to this important initiative. Comments received from hospitals and individual practitioners participating in the webinar and survey indicated great enthusiasm for this project. Participants took the initiative to voluntarily share information about the project within their own organizations and networks, widening the distribution to all relevant disciplines, committees and other safety or medication related groups within these organizations.

It is hoped that the findings and recommendations from this project will assist Canadian healthcare facilities and individual practitioners to improve the safe use of HYDROmorphine.

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## ***Report to Therapeutic Effectiveness and Policy Bureau, Marketed Health Products Directorate, Health Canada***

### ***1. Background and Understanding of Project***

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HYDROmorphone is one of the top three medications involved in medication incidents associated with harm voluntarily reported to ISMP Canada (the other two medications are insulin and morphine). To the end of June 2011, 160 incident reports involving HYDROmorphone with an associated outcome of harm or death had been received. While the actual number of incidents cannot be determined from voluntary reports, numerous medication incidents involving HYDROmorphone have also been reported in the United States as well as other countries, supporting the need for interventions in Canada and internationally to prevent further harm.

HYDROmorphone is a potent centrally-acting analgesic drug of the opioid class. It is used to relieve moderate to severe pain, and severe, painful, dry coughing. Adverse effects of HYDROmorphone are similar to those of other potent opioid analgesics, such as morphine and heroin, and include respiratory depression and sometimes circulatory depression. Available in oral and injectable forms, HYDROmorphone is about 4-7 times stronger than morphine.<sup>2,3,4</sup> More precisely, oral HYDROmorphone is approximately 4 times more potent than oral morphine, parenteral HYDROmorphone is approximately 7 times more potent than parenteral morphine, and parenteral HYDROmorphone is approximately 20 times more potent than oral morphine. Any confusion between these two drugs can have devastating consequences for the patient, including death. Based on incidents that have occurred leading to patient harm, it seems that the potency difference between morphine and HYDROmorphone is not well-understood by all healthcare professionals.

ISMP Canada has been involved in several initiatives to enhance the safe use of HYDROmorphone, including:

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<sup>2</sup> Lacy CF, Armstrong LF, Goldman MP, Lance LL, eds. Drug Information Handbook: A comprehensive resource for all clinicians and healthcare personnel, 18th edition, 2009-10. Lexi-Comp, American Pharmacists' Association. 2009, Hydromorphone monograph p. 747-749.

<sup>3</sup> Canadian Pharmacists Association. Compendium of Pharmaceuticals and Specialties, 2010. Opioids Monograph, p.1656-1659.

<sup>4</sup> For the purpose of the survey, a comparative ratio of 5:1 was used (HYDROmorphone to morphine).

- an application to the United States Adopted Name (USAN) Council to change the generic name of HYDROmorphine following a root cause analysis of a fatal HYDROmorphine/morphine substitution error<sup>5</sup>;
- recommended use of TALLman lettering (e.g., HYDROmorphine) to enhance differentiation from morphine;
- limiting product and dose availability in patient care areas<sup>6,7</sup>; and
- recommended use of independent double checks for high-alert medications, including HYDROmorphine and other opioids.

As there has been little reported activity to understand the extent of knowledge deficit among healthcare professionals and the significance of this as a contributing factor to incidents involving HYDROmorphine, the project investigated knowledge deficit as a contributor to incidents involving HYDROmorphine.

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<sup>5</sup> Event Analysis Report: Hydromorphine/ Morphine Event. Cited 8July2011; available from: [http://www.ismpcanada/download/Hydromorphine\\_Morphine\\_RCA\\_Report\\_final12.pdf](http://www.ismpcanada/download/Hydromorphine_Morphine_RCA_Report_final12.pdf)

<sup>6</sup> Priority Recommendations for Ontario Hospital Narcotic (Opioid) Project. System Safeguards to Prevent Error Induced Injury with Narcotics (Opioids). ISMP Canada Intervention Project 2008. Cited 8July2011; available from: [http://www.ismp-canada.org/download/Narcotic\\_Priority\\_Recommendations.pdf](http://www.ismp-canada.org/download/Narcotic_Priority_Recommendations.pdf).

<sup>7</sup> Accreditation Canada Required Organizational Practice Handbook, p. 33. Cited 8July2011; available from: <http://www.accreditation.ca/uploadedFiles/ROP%20Handbook%20EN.pdf>

## ***2. Objectives and Scope***

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The purpose of this project was to better understand the significance of knowledge deficit among healthcare professionals as a factor contributing to medication incidents involving HYDROmorphone.

The objectives of this project were to:

1. Conduct an assessment of knowledge related to the use and administration of HYDROmorphone among physicians, nurses and pharmacists to establish the magnitude of the issue of knowledge deficit; and
2. Provide recommendations and possible interventions to address knowledge deficit issues related to the safe use of HYDROmorphone.

The specific deliverables and anticipated timelines for the project are described below:

- Draft a knowledge assessment questionnaire (December 2011)
- Prepare a plan for distribution of the questionnaire (December 2011)
- Conduct a webinar for prospective participants (January 2012)
- Recruit Canadian hospitals and organize survey dates (January 2012)
- Provide a mid-point report on activities to date (February 2012)
- Conduct survey (February 2012)
- Analyze survey results and establish baseline findings (February - March 2012)
- Prepare and deliver a final project report with recommendations for interventions (March 2012)

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### **3. Methodology**

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#### **Project Team**

A Project Team was finalized in early December, 2011 and included:

- Julie Greenall, RPh, BScPhm, MHSc (Bioethics), FISMPC Interim Operations Leader, Institute for Safe Medication Practices Canada, provided project oversight.
- Linda Poloway, BScPharm, FCSHP, consultant to ISMP Canada served as lead for the project. Linda served as Regional Director of Pharmacy in the David Thompson Health Region of Alberta and most recently held a position as the Director, Patient Safety, with the Health Quality Council of Alberta where she led numerous provincial reviews of critical incidents, many of which involved medications.
- Lori Taylor, RN, BScN, MN student, supported the project as a team member. Lori is a Project Manager in Corporate Nursing at the University Health Network, in Toronto. Lori is currently completing a clinical placement at ISMP Canada for her Master of Nursing degree at Ryerson University.
- Ian Trimble, BScPhm, ACPR, PharmD student, supported the project as a team member. Ian is a pharmacist with the Vancouver Island Health Authority who is currently on leave completing his Doctor of Pharmacy degree through the University of Colorado. Ian's time during the project was part of his non-clinical rotation as a requirement of the University of Colorado.

#### **Development of Resources to Support the Project**

A number of individuals with relevant expertise, knowledge and experience in the area of pain management and/or use of opioids were solicited as expert advisors to the project. They agreed to provide feedback on the knowledge assessment survey and respond to clinical questions requiring their expertise. ISMP Canada was pleased to have the support of (in alphabetical order):

- Jocelyn Brown RN, B.A., BScN, MN, Palliative Care Clinical Nurse Specialist, Princess Margaret Hospital, Toronto, ON
- Paul Filiatrault RPh, BSc(Pharm), Manager, Medication Safety, Interior Health Region, Kelowna, BC
- Alex Ho, MD, FRCPC, Department of Anesthesia, St. Michael's Hospital, Toronto, ON
- Sandra Knowles, RPh, Drug Safety Pharmacist, Pharmacy Department, Sunnybrook Health Sciences Centre, Toronto, ON

- Salima Ladak, Nurse Practitioner, Toronto General Hospital Acute Pain Service, and Coordinator, University Health Network Pain Advanced Practice Nurses Committee, Toronto, ON;
- Patti Madorin, RPh, ACPR, BScPhm, Pharmacist, Patient Safety Service, Sunnybrook Health Sciences Centre, Toronto, ON

Work related to this project within and outside Canada was accessed. The following individuals and organizations were consulted in the development of the knowledge assessment survey:

- Matt Fricker, ISMP (US)
- Daniel Lalor, Clinical Excellence Commission, New South Wales, Australia
- Sunnybrook Health Sciences Centre, and University Health Network, Toronto, ON

Saskatoon Health Region agreed to field test the knowledge assessment survey. ISMP Canada staff with relevant expertise and knowledge also provided feedback.

### **Development and Conducting of a Webinar**

The Project Team developed a webinar entitled, “HYDROmorphone: Discovering What We Don’t Know”. This one hour interactive webinar was designed to provide healthcare professionals and administrators with an overview of an ISMP Canada initiative to assess knowledge deficit among healthcare providers related to the safe and effective use of HYDROmorphone. The webinar was advertised electronically via an e-mail notice from ISMP Canada to all health care organizations who currently receive the ISMP Canada Safety Bulletins. To encourage maximal attendance, the webinar was provided at no charge to all organizations and individuals interested in participating and who registered in advance. The anticipated audience consisted of hospital administrators, medication safety and quality officers, and healthcare practitioners (e.g., physicians, nurses, pharmacists, and pharmacy technicians) interested in medication safety.

The stated learning objectives of the webinar were to:

- describe the types of HYDROmorphone related incidents reported to ISMP Canada
- recognize some of the contributing factors to errors involving HYDROmorphone
- understand the purpose of the upcoming ISMP knowledge assessment survey and how individual practice sites and practitioners can participate

Two webinars were presented: one in English on February 9, 2012 and one in French on February 16, 2012. The English webinar was delivered by the Project Team while the French webinar was presented by two bilingual ISMP Canada staff members who were not part of the project with the support of a Project Team member available for questions via translation. The slides of the presentation are attached as Appendix VII (English version) and

VIII (French version). The webinars were recorded and are available to those interested in accessing it after the presentation date via the following hyperlinks:

[http://www.ismp-canada.org/download/webinars/20120209\\_Hydromorphone](http://www.ismp-canada.org/download/webinars/20120209_Hydromorphone) (English); and [http://www.ismp-canada.org/download/webinars/20120217\\_Hydromorphone](http://www.ismp-canada.org/download/webinars/20120217_Hydromorphone) (French).

### **Development and Administration of a Knowledge Assessment Survey**

Development of the knowledge assessment survey began with a limited literature search for relevant information. Findings included information about HYDROmorphone potency and errors, but questions which would test knowledge about HYDROmorphone were not available.

Relevant work in other jurisdictions related to HYDROmorphone and the contribution of knowledge deficit which contributed to HYDROmorphone incidents was examined. It was known that ISMP (US) had undertaken a similar project, but with a wider scope than that intended by ISMP Canada. A thorough review was completed of the ISMP (US) resources, including a webinar describing their findings, surveys used, and results pre and post interventions. The ISMP (US) surveys included not only knowledge assessment, but also prescribing, administration and monitoring practices, storage and dispensing of HYDROmorphone, as well as a survey examining the types of quality improvement initiatives organizations were implementing to reduce HYDROmorphone incidents.

Communication about initiatives to reduce HYDROmorphone incidents occurred with both Canadian and non-Canadian sites. The Project Team met with Sunnybrook Health Sciences Centre, Pharmacy staff, to discuss their experiences in addressing HYDROmorphone errors. Communication with various individuals involved in the medication processes of opioids from the University Health Network in Toronto focused on opioid conversion factors and ideas to engage maximal participation for the survey. In addition, personnel from the Clinical Excellence Commission, New South Wales, Australia, shared work which was relevant to this project.

Following discussions about survey format, content, and method of distribution, the Project Team determined that the optimal survey approach would be electronic in nature, should be able to be completed within 10 minutes and should be appropriate for completion by all health care providers involved in the prescribing, preparation, dispensing, administering or monitoring of HYDROmorphone and other opioids. SurveyMonkey™ was selected as the on-line administrative tool for the survey. The following areas were selected for inclusion in the survey to provide insight into knowledge related to HYDROmorphone use:

- understanding of the potency of HYDROmorphone relative to morphine
- confusion with morphine

- conversion factors of HYDROmorphone to morphine using both oral and parenteral dosage forms
- usual starting doses of HYDROmorphone both oral and parenteral
- differences between controlled or sustained release and immediate release dosage forms
- recognition of opioid toxicity versus side effects
- recognition and consideration of opioid tolerance in dosing of HYDROmorphone
- impact of co-morbidities and/or concomitant drug therapy

Several iterations of the survey were scrutinized and continuously revised by the Project Team. The drafts were shared with the expert advisors and their feedback was incorporated as part of the survey development process. In addition, ISMP Canada staff with relevant experience and knowledge reviewed the draft and final versions of the survey and provided feedback. A field test was conducted to confirm the appropriateness of the survey both in content and length. Two nursing units from the Saskatoon Health Region, Saskatoon, Saskatchewan, volunteered to field test the survey; this was completed during the first week of February, 2011.

The final version of the survey was made available on the ISMP Canada website in English immediately after the webinar on February 9, 2012 and in French immediately after the webinar on February 16, 2012. Both surveys were made available electronically on the ISMP Canada website until March 4, 2012. A copy of the English survey is attached as Appendix I; the French survey is attached as Appendix II. Subsequent to launching the survey, it was learned that some Canadian healthcare organizations did not allow access to SurveyMonkey™. As this impacted some large healthcare organizations, a decision was made to create an alternate survey format which was hosted locally on the ISMP Canada website and provided on request.

Webinar participants received an e-mail after the webinar with links to both the recorded presentation and the survey. Information was also circulated as a “web-blast” to the ISMP Canada distribution list on February 16, 2012 and was repeated on February 24, 2012 and March 2, 2010.

ISMP Canada received several inquiries requesting the ability to allow organizations to learn about their own organization’s survey results. ISMP Canada made the decision that it was important to maintain anonymity of submitted responses and this option was not offered.

## Recruitment of Survey Participants

Project Team members independently contacted hospitals and/or health regions within their province or beyond to gain the support of individuals who could serve as contacts within their healthcare organizations to advocate for the project and encourage staff to participate in the webinar and knowledge assessment survey. Individuals from the following organizations committed to fulfilling this role:

- Vancouver Island Health Authority
- Saskatoon Regional Health Authority
- Winnipeg Regional Health Authority
- University Health Network, Toronto, Ontario
- Sunnybrook Health Sciences Centre, Toronto, Ontario
- Kingston General Hospital

Following the webinar, some participants requested permission to distribute information about the project and the link to the knowledge assessment survey beyond their organization. As a result of those efforts and continuing advocacy of the project by the Project Team members, the information about the project, webinar and knowledge assessment survey was sent to several pharmacy licensing bodies in Canada, nursing associations, physician groups and the Canadian Patient Safety Institute.

## Analysis of Survey Data

SurveyMonkey™ was used as the primary on-line administrative tool for the survey<sup>8</sup>. This tool provided the following results:

- Demographics of respondents:
  - number of each discipline within nursing, pharmacy, medicine and other
  - number of each sub-discipline within each of the main disciplines
  - indication of whether the respondent had advanced training in pain management
  - indication of whether the respondent was part of a pain management team
  - indication whether facility has a pain management service
  - length of practice
  - province or territory of practice
  - area of healthcare practice
- Responses to each knowledge assessment questions

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<sup>8</sup> Upon launching the survey, it was identified that some provincial health authorities did not allow access to SurveyMonkey™. To maximize pan-Canadian participation in the survey, an alternate survey platform was prepared and provided in English and French, housed on the ISMP Canada website. Responses received via the alternative platform were manually entered into the SurveyMonkey™ version by ISMP Canada staff.

- Number and percentage of total respondents who selected each choice in each question

Analysis was conducted on those surveys which provided both demographic and knowledge assessment data. A total of 4399 respondents completed part or all of the survey; 3476 respondents completed all or most of the knowledge assessment questions. The focus of the analysis was on the responses to the knowledge assessment questions. The demographic information provided more insight into the respondents and assisted in providing context for the identified knowledge deficits.

When the results were examined, it was obvious that the detail of data required to adequately inform the project on the magnitude of knowledge deficit and within which disciplines or sub-disciplines that deficit resided could not be provided by the SurveyMonkey™ results alone. Therefore the raw data was exported into an Excel® spreadsheet where it could be sorted and filtered to provide specific information on knowledge deficit for every question.

On examination of the data, it became evident that some inaccuracies existed that may have occurred as a result of data entry or due to technical problems with the on-line tool. For example, several respondents incorrectly selected their country of origin as outside of Canada when they indicated that they resided in a province or territory of Canada. These errors were manually corrected. To ensure that the sub-disciplines aligned with the primary discipline selected, a review of all descriptors of the primary role of the respondent was conducted. Several instances of entry of a sub-discipline (e.g. LPN/RPN) within a primary discipline that did not align (e.g. Pharmacy) were found and manually corrected. Lastly, the “Other” main category that respondents selected to describe their primary role was reviewed to determine if a more accurate alignment with the main disciplines of nursing, pharmacy or medicine could be made. Several corrections were made, moving the “Other” entry into a more relevant discipline (e.g. Nurse Practitioner was moved from the “Other” category to the “Nursing” category). Reconciliation of the number of respondents was made after all corrections to ensure the sum of the number of sub-disciplines was equal to the total number of respondents for that main discipline. Review of the English survey resulted in elimination of four responses; 18 responses from the French surveys were eliminated.

Responses to all questions were categorized by the main discipline, followed by sub-discipline to determine if any knowledge deficit resided in all or some disciplines and whether any specific sub-discipline had a greater knowledge deficit. Those sub-disciplines who did not have a need to know the information asked by the question were identified. Several questions were subjected to further analysis by examining length of practice, area of practice (e.g. community hospital, long term care) and/or frequency of use of HYDROMorphone. The main “Other” category was reviewed to determine if additional

analysis was necessary. Respondents who selected the “Other” discipline were extremely varied; individuals included those from maintenance, materiel management, occupational therapy, social work, paramedics, etc. As the respondents in this group were not generally responsible for prescribing, dispensing, preparing, administering or monitoring HYDROmorphine, this group was excluded from full analysis. Conclusions regarding knowledge deficit for each question were then made. Figure 1 below depicts the methodology applied.

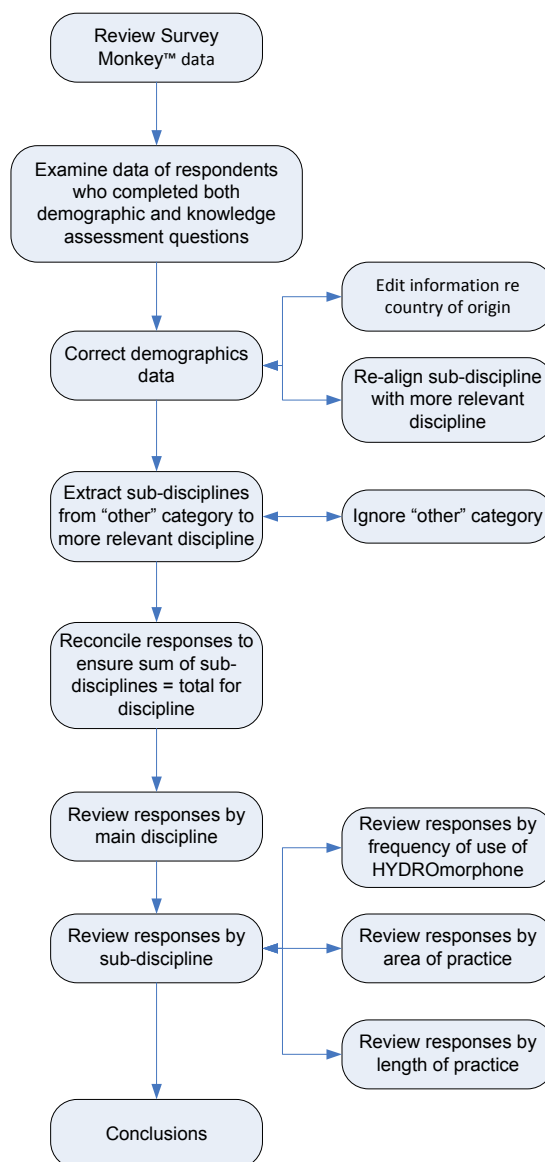


Figure 1. Analysis of HYDROmorphine Knowledge Assessment Survey

## Examining Other Data Sources for Impact of Knowledge Deficit on HYDROmorphine Incidents

A parallel aggregate analysis of the relationship between HYDROmorphine incidents and knowledge deficit is underway by ISMP Canada; this analysis is not part of the project described in this report but the findings to date have helped to inform the development of recommendations to address knowledge deficit.

The ISMP Canada Medication Incident Database (Individual Practitioner Reporting and Analyze-ERR) and the Canadian Institute for Health Information National System for Incident Reporting (CIHI NSIR) databases were searched for all incidents involving HYDROmorphine and knowledge deficits. 513 incidents were identified; 258 originated from the ISMP Canada Medication Incident database and 255 were found in the CIHI NSIR database. Further analysis was then conducted to identify incidents involving HYDROmorphine with contributing factors related to knowledge deficits. This qualitative analysis used a stepwise approach adopted from the methodology described by Creswell.<sup>9</sup>

An initial analysis of the incidents from the two data sources found that data saturation was reached by analyzing the CIHI NSIR incident reports, and that very little additional insight would be gained by further analysis of incidents from ISMP Canada. The decision was therefore made to focus the analysis on the CIHI NSIR incidents only. Subsequent manual screening of the CIHI NSIR data led to the exclusion of 68 incidents deemed to be unrelated to HYDROmorphine knowledge deficits. As a result, there were a total of 187 incidents included for further analysis (see Figure 2).

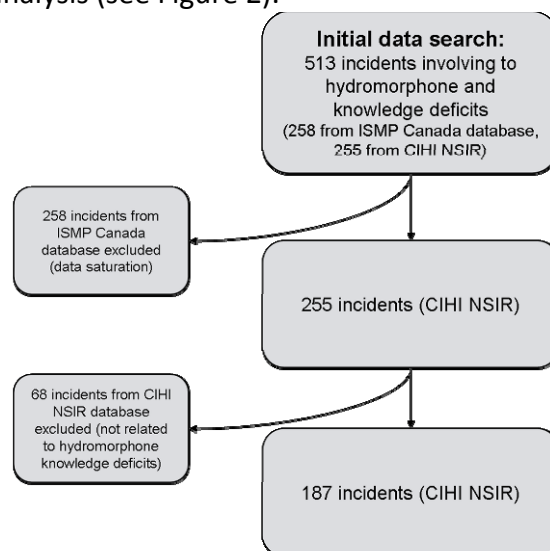


Figure 2: Incident Inclusion Criteria for Aggregate Analysis

<sup>9</sup> Creswell JW. *Qualitative Inquiry and Research Design: Choosing Among Five Traditions*. London: SAGE Publications; 1998.



The aggregate analysis work completed to date includes the following steps:

- Two analysts independently reviewed the incidents to identify “themes” of contributing factors related to knowledge deficit that emerged from the incident report narratives.
- The two analysts convened and reached consensus on a finalized theme list.
- The incidents were then categorized according to the finalized theme list.
- Within each category, incidents were further classified into sub-categories until small groups of incidents were achieved that were relatively homogeneous in nature and most closely aligned with knowledge deficit.

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## 4. Findings

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### Webinars

A resounding 480 sites registered for the English language webinar on February 9, 2012 webinar and 307<sup>10</sup> participants were logged by the system. This was the highest response to an ISMP Canada webinar to date. Given the large number of registrants, there was a slight delay in the commencement of the webinar to allow all registrants to log in. A poll conducted during the webinar asking attendees to indicate the number of individuals attending in addition to themselves indicated a total of 734 participants. The actual number is likely higher as the poll was only completed by 195 participants. One of the sites attending identified that there were 100 participants present!

A positive response was also received for the French language webinar with 31 sites participating. In response to a poll asking how for many attendees were participating from each site, five sites indicated 67 participants in addition to the individual responding for a total of at least 98 participants.

Webinar Participation by Province		
Province	English Language Webinar	French Language Webinar
Alberta	37	
British Columbia	42	
Manitoba	21	
New Brunswick	7	9
Newfoundland	2	
Nova Scotia	26	
Northwest Territories	2	
Ontario	142	1
Prince Edward Island	1	
Quebec	3	21
Saskatchewan	26	

**Table 1: Webinar Participation by Province**

There was also international participation in the English language webinar:

- United States – 4
- Ireland – 1 (registered; unclear if attended)

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<sup>10</sup> It was anticipated that there would be a certain number of “no shows” for a complimentary webinar (typically approximately 10%); however there was also a discrepancy between the number of participants counted at the time of the webinar (430) and the number actually registered by the system (307). ISMP Canada has identified discrepancies in attendee numbers for other webinars since a recent upgrade to the webinar system. An additional factor in the discrepancy for the HYDROmorphone webinar may have been related to the large number of sites attempting to log into the webinar at the same time.

Representation by profession for the English language webinar, as reported during the webinar poll\*, was as follows:

- Nurse – 128
- Office staff - 9
- Other – 33
- Patient Care Management – 9
- Pharmacist – 96
- Pharmacy Technician – 9
- Physician -7
- Quality and Risk Management – 24
- Student – 1

\*All webinar participants did not submit answers to the poll, so the total number listed here is less than the total number of participants.

Specific professional categories were not identified for the French language webinar.

Several polling questions were asked during each webinar. Questions and corresponding responses are provided below:

1. What are the roles of the team members in the room with you today?

Team member roles		
Role	English Language Webinar	French Language Webinar
Clinician	76/195 (39%)	4/22 (18%)
Manager	73/195 (37%)	4/22 (18%)
Clinical Specialist	22/195 (11%)	5/22 (23%)
Quality/Risk Specialist	30/195 (15%)	3/22 (14%)
Other	80/195 (41%)	5/22 (23%)

2. Which of the following best describes the use of HYDROmorphine at your practice site?

Use of HYDROmorphine at practice site		
	English Language Webinar	French Language Webinar
Rarely used	8/190 (4%)	1/21 (5%)
Used less frequently than morphine	49/190 (26%)	3/21 (14%)
Used about the same frequency as morphine	58/190 (31%)	6/21 (29%)
Used more frequently than morphine	64/190 (34%)	11/21 (52%)
It has almost completely replaced morphine	11/190 (6%)	0/21 (0%)

3. Does your institution have an equianalgesic table?

Equianalgesic Table		
	English Language Webinar	French Language Webinar
Yes	99/186 ( 53%)	9/19 (47%)
No	83/186 (45%)	8/19 (42%)

4. What HYDROmorphone: morphine ratio do you use?

HYDROmorphone: Morphine Ratio		
Ratio	English Language Webinar	French Language Webinar
1:4	19/186 (10%)	2/19 (11%)
1:5	106/186 (57%)	10/19 (53%)
1:7	11/186 (6%)	3/19 (16%)
1:9	6/186 (3%)	0/19 (0%)
Other	22/186 (12%)	1/19 (5%)

5. What are the most common errors (with HYDROmorphone) at your site?

Most common errors		
Error	English Language Webinar	French Language Webinar
Incorrect dose administered	53/178 (30%)	9/22 (41%)
Immediate release administered when controlled release intended (or vice versa)	62/178 (35%)	4/22 (18%)
HYDROmorphone given when morphine ordered (or vice versa)	40/178 (22%)	7/22 (32%)
HYDROmorphone given by incorrect route	4/178 (2%)	1/22 (5%)
Other error not described above	19/178 (11%)	0/22 (0%)

Thirty questions and comments were posed during the question and answer period of the English language webinar. Due to time restrictions most, but not all questions were addressed verbally during the webinar. The French language webinar also generated discussion among participants but there were fewer questions (likely due to the smaller number of participants).

An e-mail address of [HYDROmorphone@ismp-canada.org](mailto:HYDROmorphone@ismp-canada.org) was provided for further inquiries. General feedback in the form of e-mails after the webinar and comments during the webinar were very positive on the value of the webinar.

## Recruitment of Participants

The uptake of this project and enthusiasm for spread was beyond the expectations of ISMP Canada. The following quotations from supportive organizations reflected the perceived value of this project:

*I have had a tremendous response in terms of spreading the word about this project, and making it available for participation on a regional basis. I have the support of all the major councils, and have provided them with the link asking them to spread to their site organizations etc. It is definitely going far and wide within the XXX Region for nursing, pharmacy (pharmacists and technicians) and physicians, as well as some allied health.*

*We have posted the link on the internal website. It is featured as a main item. It has been highlighted in a region wide nursing newsletter. The survey has been sent to every physician, resident and senior med student. We have sent the survey to all pharmacists and pharm techs. Clinical nurse educators and Managers of Nursing have all received the survey for dissemination to their staff. This week I will send the slide deck to all Clinical Nurse Educators with a reminder about the survey and finally, I plan to broadcast a wide reminder through my contact list.*

## Analysis of the Knowledge Assessment Survey

The English knowledge assessment survey (see Appendix I) was posted on-line February 9, 2012 and remained active until March 4, 2012. The French version of the survey (see Appendix II) was available on-line February 16, 2012 until March 4, 2012. The survey was comprised of 10 demographics related questions and 15 knowledge assessment questions. One knowledge assessment question had 4 parts to the question; hence a total of 19 knowledge assessment questions were included.<sup>11</sup> One additional question regarding the frequency of use of HYDROmorphone was also included. Appendices III and IV provide the questions, answers and the specific area of knowledge examined by each question for the English and French surveys respectively.

A total of 4399 respondents completed part or all of the survey; this included 77 respondents who completed the French version. 3476 respondents completed all or most of the knowledge assessment questions. There was representation from every province and territory in terms of respondents who completed all or most of the knowledge assessment survey questions.

Respondents who completed some or all of the demographics questions and some or all of the knowledge assessment questions were as follows:

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<sup>11</sup> During analysis of the results from the French language survey, it was identified that Demographics Question # 7: "Does your hospital have a pain service (e.g. Acute Pain Management Service)?" was inadvertently omitted.

<b>Respondents by Discipline</b>	<b>Number of Respondents</b>
Nursing	2783
Pharmacy	1188
Medicine	323
Other	105
<b>TOTAL</b>	<b>4399</b>

**Table 2: Respondents by Discipline**

Respondents who selected the “Other” discipline were extremely varied; individuals included those from maintenance, materiel management, occupational therapy, social work, paramedic, etc. Those respondents who served in an administrative or management capacity but were from the professions or nursing, pharmacy, or medicine are represented in Table 1 above in their respective disciplines.

Respondents within the discipline of nursing were comprised of the following:

<b>Nursing Sub-Disciplines</b>	<b>Number of Respondents</b>
RN	2005
LPN/RPN	369
Nurse Practitioner	71
Advanced Practice Nurse / Clinical Nurse Specialist	138
Nursing Student	25
Other	163

**Table 3: Nursing Sub-Disciplines**

Respondents within the discipline of pharmacy were comprised of the following:

<b>Pharmacy Sub-Disciplines</b>	<b>Number of Respondents</b>
Pharmacist	997
Registered Pharmacy Technician	38
Unregistered Pharmacy Technician / Pharmacy Assistant	82
Pharmacy Student	31
Pharmacy Resident	7
Pharmacy Technician Student	3
Other	24

**Table 4: Pharmacy Sub-Disciplines**

Respondents within the discipline of medicine were comprised of the following:

Medicine Sub-Disciplines	Number of Respondents
General Practitioner	87
Specialist	159
Medical Student	10
Resident	51
Other	17

**Table 5: Medicine Sub-Disciplines**

The overall results of the 3483 respondents who answered some or all of the knowledge assessment questions were as follows:

Nursing		Pharmacy		Medicine		Other		Total	
Number	Percent with correct answer	Number	Percent with correct answer	Number	Percent with correct answer	Number	Percent with correct answer	Number	Percent with correct answer
2169	72.51%	968	78.80%	299	81.71%	40	65.60%	3476	74.97%

**Table 6: Overall Results by Discipline**

Responses to each question by discipline are provided in Appendix V.

### Knowledge Deficit Findings

Each question was analyzed according to discipline and sub-discipline. Further analysis examining the relationship of length of practice, area of practice, and/or frequency of use of HYDROmorphone was conducted on specific questions. A detailed analysis of the survey questions can be found in Appendix IX; highlights are summarized here. It was concluded that every question revealed some level of knowledge deficit related to the information required to answer the question correctly.

To assess the magnitude of knowledge deficit as it relates to HYDROmorphone use, the knowledge assessment questions were categorized into six different categories: pharmacology, indication, adverse effects, dosing, difference, and calculations. See Appendix VI for categorization of questions.

The greatest area of knowledge deficit appeared to be in the “**pharmacology**” area and was represented in responses from all disciplines. This area examined knowledge of differences in onset and duration of action between sustained release and immediate/ regular release formulations, monitoring based on duration of action, and the relationship between opioids and rescue agents. Questions #10 and #15 focused on the ability to determine the duration



of action of long acting and immediate release HYDROmorphone formulations. Question #10 additionally examined the understanding of the duration of action of naloxone in relation to the durations of action of long acting and immediate release HYDROmorphone and how this impacts administration of naloxone (a reversal agent).

All disciplines scored low on question #10 indicating a knowledge deficit in the ability to identify the duration of action of naloxone, immediate release and long acting HYDROmorphone and its impact on monitoring the patient after administration of naloxone. Respondents from medicine received the highest score of 50.5% correct answers; nursing respondents scored 26.74% while pharmacy respondents scored 30.79%. The aggregate score was 29.92%. The most frequently selected incorrect answer across all medicine and pharmacy was to monitor the patient for 5 hours if long acting HYDROmorphone was given, revealing that the durations of action of long acting HYDROmorphone (8 – 12 hours) and naloxone (20 – 90 minutes) were not well known. Nursing respondents selected monitoring pain caused by the reversal of the analgesic effect by naloxone. The least frequently chosen incorrect answer across all disciplines and sub-disciplines was that increased sweating was a sign that naloxone was working well.

Question #13 examined knowledge that the controlled release formulation of HYDROmorphone would align with a dosage regimen of q12h based on its duration of action. In developing the most correct answer for this question, it was acknowledged that the answer, “Give HYDROmorphone CR 9 mg (3 × 3 mg capsules)” may have been chosen and would be correct based on facility specific policies and procedures. In many facilities, pharmacy may have appropriately sent HYDROmorphone CR 9 mg (3 × 3 mg capsules) along with a clarification note requiring the prescriber to co-sign the updated order. Thus both b) (Give HYDROmorphone CR 9 mg [3 x 3 mg capsules]) and d) (Contact the prescriber to clarify if she intended the immediate-release or the controlled-release product) were considered correct for analysis purposes. The important issue in this question was to ensure respondents recognized that a dosage interval of q12h would infer the use of a controlled-release product. Therefore, in analyzing this question, selection of the answer, “Give HYDROmorphone 9 mg (using a combination of 1 mg and 2 mg tablets)” would have been cause for greatest concern. Using both b) and d) as the correct answer, the scores were as follows: nursing – 81.93%, pharmacy – 93.39%, medicine – 84.95%. It is acknowledged that this question was not designed appropriately for medicine, as the most frequent prescriber, to answer; that was also identified in the respondents’ comments. Hence, medicine was forced to answer as though they were from a nursing or pharmacy discipline.

All disciplines scored low on question #15: nursing – 49.98%, pharmacy – 62.09%, medicine – 60.25% indicating a knowledge deficit in the ability to identify the duration of action and effect of immediate release and long acting HYDROmorphone and application of this knowledge in monitoring patients on HYDROmorphone. There may also have been a knowledge deficit of recognition that Dilaudid® is an immediate release formulation of

HYDROmorphone. The most frequently selected wrong answer was providing appropriate pain control across all sub-disciplines of nursing with the exception of RNs, although the number who selected providing appropriate pain control was very close to those who selected monitoring a decreased level of consciousness. This correlates to the most frequently chosen incorrect answer to question #10, being concern with appropriate pain control. This may reflect that a primary focus of nursing care of the pain patient is appropriate pain control. Other monitoring parameters may not receive as high a priority.

The second most common area of knowledge deficit appeared to be related to conducting **mathematical calculations**, most noticeably within respondents from the nursing discipline. Question #14 examined the ability to do mathematical calculations relevant to opioid drug products and determination of dose to be administered. The results from each discipline were: nursing – 68.05%, pharmacy – 94.52%, medicine – 92.31%. The total aggregate response of 77.27% includes individuals from such areas as maintenance, materiel management, social work, physiotherapy, etc. Examining the nursing data, 137/2169 respondents would have given 10 – 1000 times the correct dose. Although the total percentage is low at 6.31% there is potential for harm based on this knowledge deficit. More than one quarter of respondents (556/2169) would have under-dosed the virtual patient. Within the sub-disciplines, nurse practitioners scored the highest at 82.54%; nursing students scored the lowest at 55.56% followed by LPNs/RPNs at 58.69%. Comparatively, pharmacy and medical students scored 90.48% and 88.89%, respectively, on this question. Pharmacists scored about 95% while technicians scored about 85% correctly. Medicine, similarly, scored high on this question with, notably, all 48 residents scoring 100%. Specialists scored 93.15% while general practitioners scored 87.5%. For all disciplines who chose 200 mL, 20 mL, or 2 mL, there did not appear to be a translation of that volume into 200 vials, 20 vials and 2 vials, respectively, of the 2 mg/mL formulation of HYDROmorphone. The need to use multiple units of any one medication is commonly a signal to double check dosage calculations.

**Dosing** type questions examined knowledge of starting doses of both HYDROmorphone and morphine, conversion factors between the two drugs, oral versus parenteral dose conversions, doses required to produce tolerance and impact of concomitant drug therapies or disease states on HYDROmorphone dosing. Within the dosing category of questions, the following were identified as knowledge deficits within the various disciplines as listed:

- ability to identify opioid tolerance - all disciplines
- recognition that obese patients do not require higher doses - all disciplines
- recognition that COPD patients do not require the same doses as those without COPD – all disciplines
- recognition that patients on a benzodiazepine do not require higher or same doses as those not on a benzodiazepine – nursing and pharmacy
- recognition that the elderly do not require the same doses as younger patients – nursing and pharmacy

- ability to convert oral dose of HYDROmorphone to equi-analgesic parenteral dose of HYDROmorphone – nursing

In question #6, which examined knowledge of starting oral doses of HYDROmorphone, the majority within each discipline chose the correct response: nursing – 88.15%, pharmacy – 92.15%, medicine – 92.64%. If a significant number of respondents had chosen the answer of 10 – 20 mg PO q4h PRN this would have identified a significant knowledge deficit of starting oral doses of HYDROmorphone. This was not observed. A significant number of aggregate respondents (7.83%, 272) answered “None of the above”. The highest numbers resided in the nursing group across nearly all sub-disciplines but lowest in the RN group. The highest numbers in pharmacy are in the “other” group. Of note, 6.16% of medicine specialists selected this answer. Further discussion with pain management experts to determine why this answer was selected did not reveal any sound rationale. Researching “Therapeutic Choices” and “Lexi-Comp”, support for the answer as originally selected by the Project Team was substantiated.

There was a great deal of similarity in the responses between question #6 which examined knowledge of appropriate starting doses of ORAL HYDROmorphone and question #7 which looked at appropriate starting doses of SUBCUTANEOUS HYDROmorphone. Scores for question #7 were: nursing – 82.48%, pharmacy – 86.36%, medicine – 90.64%. Across all nursing sub-disciplines but nurse practitioner, respondents selected the next higher dose (5-10 mg oral, 2-5 mg subcutaneous) and “none of the above” as the most frequent wrong answers for questions #6 and #7. Across all pharmacy sub-disciplines respondents “none of the above” was selected as the most frequent wrong answers for questions #6 and #7, except for pharmacy students who selected a higher dose. Across all medicine sub-disciplines respondents “none of the above” was selected as the most frequent wrong answers for questions #6 and #7, except for specialists and medical students who selected a higher dose. The actual numbers of respondents in each discipline, as well as the percentages, who selected “none of the above” in question #6 correlate very closely to those who chose “none of the above” in #7. The expert advisors were consulted on reasons why “none of the above” was such a commonly selected answer. Their feedback, in conjunction with reference information from “Therapeutic Choices” and “Lexi-Comp” provided support for the answer as originally selected by the Project Team was substantiated. No reasons for selecting “none of the above” could be rationalized.

Question #9 examined knowledge of opioid tolerance. The scores for correct answers were: nursing – 72.43%, pharmacy – 74.07%, medicine - 79.26%. The most commonly selected wrong answer across all disciplines was selection of the fentanyl patch scenario where a patient had been on the patch for 3 months. While that answer did correctly reflect opioid tolerance, respondents failed to recognize that long acting morphine administered for two weeks also conferred tolerance. The second most frequently selected wrong answer across

all disciplines was “all of the above” not recognizing that Tylenol No. 3 given intermittently would not cause opioid tolerance.

Question #11 examined knowledge of the impact of various co-morbidities and concurrent therapies on the dosing requirements of HYDROmorphine. Obesity, COPD, obstructive sleep apnea, concurrent therapy with a benzodiazepine and use of HYDROmorphine in elderly patients was examined. There appeared to be a knowledge deficit regarding appropriate dosing of HYDROmorphine in obese patients across all disciplines, but noticeably in nursing. Across all disciplines, there was a significant percentage of respondents who indicated that higher doses of HYDROmorphine were required in obese patients (nursing – 37.84%, pharmacy – 23.18%, medicine – 20.81%). Correct scores within each discipline were: nursing - 62.16%, pharmacy – 76.82%, medicine – 79.19%. There appeared to be a knowledge deficit regarding appropriate dosing of HYDROmorphine in COPD patients across all disciplines. Aggregate scores of the correct answer indicating that patients with COPD require lower doses of HYDROmorphine for each discipline were: nursing – 72.99%, pharmacy – 79.27%, medicine – 77.93%. Few respondents in all disciplines felt COPD patients should receive higher doses of HYDROmorphine (nursing – 0.97%, pharmacy – 0.41%, medicine – 0.33%). All disciplines indicated a greater knowledge that patients with obstructive sleep apnea require lower doses of HYDROmorphine. The aggregate scores for each discipline were: nursing - 84.61%, pharmacy – 86.54%, medicine – 87.63%. A significant number in each discipline indicated that patients with obstructive sleep apnea require no dose adjustment of HYDROmorphine; responses ranged from more than 12% in medicine to more than 15% in nursing. Based on the significant number of respondents who indicated that no dose adjustment for HYDROmorphine is required in patients receiving benzodiazepines, there may be a knowledge deficit in this area particularly in nursing and pharmacy. Selection of the correct answer which indicated that patients on a benzodiazepine require lower doses of HYDROmorphine were provided by 76.03% of nursing, 79.09% of pharmacy and 86.29% of medicine respondents. In every discipline, the students scored highest in providing the correct answer. Students in each discipline scored the highest in providing the correct answer indicating that patients on benzodiazepines would require lower doses of HYDROmorphine. Inference may be that this theory is taught and/or that experience in dosing patients on benzodiazepines does not always align with what is being taught. Although scores were high (nursing – 95.56%, pharmacy – 96.37%, medicine – 99.33%) there appears to be a knowledge deficit within nursing and pharmacy to correctly identify that the elderly patients require a lower dose of HYDROmorphine. The greatest knowledge gap appears with the LPN/RPN respondents who scored lowest overall; this group most frequently indicated elderly patients do not require any HYDROmorphine dosing adjustments.

A general observation regarding question #11 was that not uncommonly in the free text portion of the survey, respondents stated that the responsibility to select the correct dose of medication is that of the prescriber. Within nursing, the 8\* rights (\*College of Nurses of

Ontario) of medication administration includes ensuring the correct dose. Anecdotally, and as supported by the some of the comments of the survey respondents, some nursing respondents appeared to interpret this to be a match between the dose ordered by the prescriber and the dose administered; i.e., some nursing members did not consider it to be their responsibility to verify that the dose ordered is appropriate for the patient considering age, weight, comorbidities, concurrent medication therapy, etc. The overall lower score by nursing across all areas within question #11 may be a reflection of this belief.

Question #12 examined whether respondents recognized that parenteral HYDROmorphone is more potent than the oral form. More than 85% of all respondents correctly identified this. Medicine scored highest at 95.32%, followed by pharmacy at 90.5%. Nursing at 82.02% scored below the average of all disciplines (85.5%). There appeared to be a knowledge deficit of the greater potency of parenteral HYDROmorphone when compared to the oral formulation in all disciplines. The greatest knowledge gap resided within nursing and the LPN/RPN category.

The **adverse effects** category examined knowledge of side effects, toxicity, and overdose. Within the adverse effects category respondents across all disciplines were not able to discern that an adverse effect, or predictable side effect, of morphine would not preclude treatment with HYDROmorphone. Respondents from medicine scored lowest in recognizing signs of HYDROmorphone overdose. Question #2 examined whether respondents recognized that patients who have experienced adverse reactions or have demonstrated intolerance to morphine may be safely given HYDROmorphone. In every discipline there was evidence of lack of knowledge regarding identification of adverse side effects of morphine and the impact on HYDROmorphone use in the same patient. The discipline for which this information is most applicable is medicine and nurse practitioners as their members are most frequently prescribers. There was a noticeable lack of knowledge among medicine and nursing students. Nearly 30% of aggregate respondents were not able to identify that the adverse reaction demonstrated were side effects of the drug and not a true allergy and, therefore, not a contraindication to giving HYDROmorphone (which may have similar side effects); correct scores were 65.98% for nursing, 73.35% for pharmacy, and 85.62% for medicine.

Question #8 examined whether respondents could differentiate between signs of side effects and overdosing. The average, aggregate correct score of those who correctly identified signs of overdose of HYDROmorphone was 84.84%. Nursing rated 86.26 %, pharmacy 85.33% and medicine 76.25%. The discipline most likely to directly observe actual symptoms of overdose (i.e. nursing) scored highest. The most common wrong answer was “all of the above” across all disciplines. The ability to identify signs of overdose is a “must know” area of knowledge for nursing and all nursing sub-disciplines as well as across the board for medicine. Pharmacists “should” know this information but are typically not at the bedside to monitor vitals. Only about 57% of students selected the

correct answer. More than 25% of pharmacy technicians selected the wrong answer to this question but application of knowledge of overdose is not within their scope of practice. Generally, all disciplines except medicine fared better on this question than they did on question #2 which examined knowledge of the ability to identify side effects versus allergy symptoms.

The **difference** category examined the ability to distinguish difference between HYDROmorphine and morphine with reference to potency and drug names. Question #1 examined the knowledge of the term “equipotent” to be interpreted as having the same potency. There appears to be a lack of understanding of the term, “equipotent” by all disciplines. The vast majority in every discipline chose the incorrect answer. Correct scores were: nursing – 16.98%, pharmacy – 42.25%, medicine – 46.82%. However, the ability to understand the term “equipotent” is not a reflection of the general knowledge of HYDROmorphine within any of the disciplines based on responses to other questions in the survey that examined potency.

Question #4 examined whether there were respondents who are confused by the similarity in the drug names of HYDROmorphine and morphine and do not recognize that morphine and HYDROmorphine are two different drugs but are both opioid analgesics. Even though the majority in each discipline and category got the correct answer (nursing - 93.59%, pharmacy – 97.83%, medicine – 97.99%), some answers provided reveal knowledge deficit in being able to differentiate between HYDROmorphine and morphine. In every discipline at least one respondent indicated that HYDROmorphine is “watered down” morphine.

Question #5 examined whether respondents recognized that HYDROmorphine is significantly more potent (about 5 times) than morphine. While the majority of respondents identified that HYDROmorphine 1 mg is approximately equal to 5 mg of morphine, that selection may have been influenced by similar information presented during the webinar. There is a concerning number of respondents in every discipline who demonstrated knowledge deficit in differentiating between morphine and HYDROmorphine, and provided answers that indicate they believe both drugs are the same. Correct scores were: nursing – 85.48%, pharmacy – 92.36%, medicine – 91.97%. More than 5% of all nursing respondents indicated morphine was as strong or stronger than HYDROmorphine and 9% indicated HYDROmorphine is twice as strong as morphine. Approximately 2.6% of all pharmacy respondents indicated morphine was as strong or stronger than HYDROmorphine. 14 respondents or approximately 5% of all medicine respondents indicated morphine is as strong or stronger than HYDROmorphine.

There did not appear to be a knowledge deficit in recognizing **indications** for HYDROmorphine as evidenced by responses to question #3 which examined whether respondents recognize that HYDROmorphine can be used for acute pain.

Several questions were analyzed to determine if there was any relationship between selection of the correct answer and the length of practice and/or area of practice. In most cases, there was no clear relationship with either factor although there was a slight difference regarding the relationship to area of practice; more incorrect responses were received from respondents who worked in long term care. Although one might anticipate that this group used HYDROmorphine less frequently, this was not the case; the majority of respondents from long term care reported using HYDROmorphine more frequently than morphine or used it exclusively.

### **Aggregate Analysis of Incident Reports Involving Hydromorphone with a Contributing Factor of Knowledge Deficit**

A parallel aggregate analysis of the relationship between HYDROmorphine incidents and knowledge deficit is underway by ISMP Canada. This qualitative analysis of HYDROmorphine incidents identified over 50 knowledge deficits. They are classified under two main themes:

1. **Knowledge deficits related to the pharmacological and pharmaceutical properties of HYDROmorphine:** This category included knowledge deficits such as its high potency of HYDROmorphine, the different HYDROmorphine formulations available and mix-ups involving the drug name “HYDROmorphine”.
2. **Knowledge deficits related to the HYDROmorphine medication use process:** This category included deficits of knowledge such as the proper steps for verifying HYDROmorphine orders; knowledge and skills required for accurate dose calculations; and the knowledge required for accurate programming of IV pumps for HYDROmorphine infusions.

Figure 3 provides a summary of the preliminary findings, including the main themes and sub-themes identified.

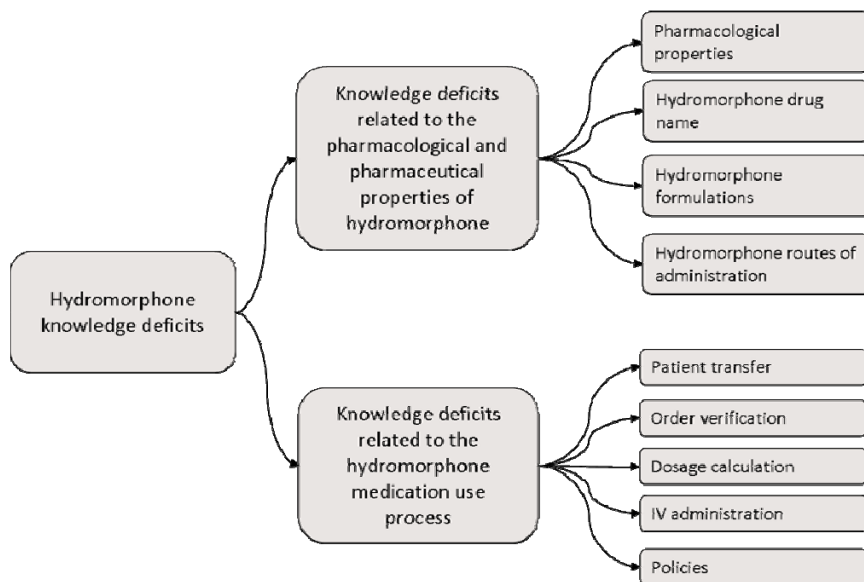


Figure 3: HYDROmorphine knowledge deficits: preliminary aggregate analysis findings

### Incidental Findings: Project Learning

The following were identified from the HYDROmorphine Knowledge Assessment and Intervention Project undertaking and will serve to improve future projects:

1. The survey tool used (SurveyMonkey™) could not be accessed by some participants due to organizational firewalls and did not provide flexibility in terms of data management. For future projects:
  - a. Research on-line survey tools and select one which provides maximal management of data to get results that inform the project.
  - b. Consider technical skills required to manage data from survey if administrative tool does not meet all requirements. Budget for such a resource if required.
2. Additional questions were identified on completion of the survey that would have provided valuable information in interpreting the results:
  - a. Did you attend the webinar"? This may have impacted question #4 which addressed the relative potency of HYDROmorphine versus morphine. The answer of 5:1 (HYDROmorphine to morphine) was discussed during the webinar.
  - b. What is your primary area of practice (e.g. surgery, intensive care, palliative, etc.)?
  - c. What type of patients do you deal with (e.g. pediatrics, neonates, adults, rehabilitative adults, etc.)
  - d. Provide additional categories in the "other" category within each discipline such as "management", "educator", etc.



- e. Include “I don’t know” or “unsure” as a choice for all questions.
3. On review of the survey responses, it was identified that not all questions could be answered easily by all respondents. For future surveys:
- a. Ensure all questions are appropriate for all disciplines.
  - b. Ensure all questions are appropriate for all healthcare providers in all practice settings. Where that is not possible, provide an answer of “not applicable”.

### **Limitations of the Project**

This survey cannot define the state of knowledge deficit regarding the prescribing, dispensing, preparation, administration and/or monitoring of HYDROmorphone in Canada. The survey was voluntary in nature and does not represent a scientifically derived number of health care providers working in Canadian facilities or organizations. Sample sizes are larger for nursing and pharmacy respondents than for medicine respondents.

The survey questions were based on reference supported knowledge that the Project Team and expert advisors felt should be present in order to use HYDROmorphone safely, but did not cover the full scope of HYDROmorphone management within facilities and organizations.

Although attempts were made to design the survey questions to apply to all disciplines who prescribe, dispense, prepare, administer and/or monitor HYDROmorphone in all settings, it was recognized during the analysis phase of the project that some questions targeted only nursing or pharmacy disciplines and those who worked in hospitals.

Design of the survey may have caused data entry errors that were discovered during the analysis phase of the project. It was discovered that some respondents who selected a main discipline such as nursing were directed to sub-disciplines that did not align with that discipline; e.g. a nursing respondent may have been directed to a pharmacy sub-discipline such as pharmacist or pharmacy technician. When data was examined, all entries that contained sub-discipline data that did not align with the main discipline were eliminated from analysis as it was impossible to determine the source of the original respondent. In addition, it appears that the survey design on two pages only, one for demographics and one for the knowledge assessment, may have led to incomplete submissions: 923 respondents completed only the demographics section of the survey.

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## 5. Recommendations

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The following actions are suggested to be undertaken by ISMP Canada to assist healthcare facilities and individual practitioners to improve the areas of knowledge deficit identified through the project:

1. Develop and publish an ISMP Canada bulletin to share the learning from this project.
2. Present a follow up webinar to report the findings of the knowledge assessment survey and the recommendations.
3. Update the knowledge assessment survey to include learning from the project.
4. Expand the information available on the ISMP Canada website related to safe use of opioids to include a dedicated HYDROMorphone page. Include on the webpage:
  - a. Updated knowledge assessment survey, in French and English, with the answer key
  - b. ISMP Canada Safety Bulletin on the project
  - c. Other information to support safe use of opioids (e.g., references to pain management guidelines, equi-analgesic charts developed/ adopted by credible Canadian sources)
5. Consult with experts on innovative strategies to decrease potential for errors related to HYDROMorphone, including those related to knowledge deficits.
6. Provide results of the survey to academia of nursing, pharmacy and medicine for their review of the knowledge deficits identified (e.g., via expanded distribution of the ISMP Canada Safety Bulletin) to assist educators in identifying potential enhancements to existing curricula for each discipline.
7. Encourage facilities/ organizations/ regional health authorities to:
  - a. Use the knowledge assessment survey as a teaching tool for their staff;
  - b. Review the knowledge deficits identified from the survey for the purpose of enhancing orientation, refresher courses, policies and procedures, and other resource information addressing the use of HYDROMorphone and other opioids; and
  - c. Develop and implement tables of usual starting doses and equi-analgesic conversion tables for oral and parenteral HYDROMorphone and other opioids.
  - d. Develop and implement protocols for dosing and monitoring patients receiving reversal agents such as naloxone for overdose of immediate release and long acting HYDROMorphone and other opioids.
  - e. Develop and implement a process of independent checking for calculations of HYDROMorphone and other opioids.

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## 6. Summary

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ISMP Canada and the Project Team were extremely pleased with the national response to this important initiative. Comments received from hospitals and individual practitioners participating in the webinar and survey indicated great enthusiasm for this project. Participants took the initiative to voluntarily share information about the project within their own organizations and networks, widening the distribution to all relevant disciplines, committees and other safety or medication related groups within these organizations.

It is hoped that the findings and recommendations of this project will assist Canadian healthcare facilities and individual practitioners to improve the safe use of HYDROMorphone.

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## ***7. Appendices***

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Appendix I: HYDROmorphone Knowledge Assessment Survey – English

Appendix II: Sondage d'évaluation de connaissances de l'HYDROmorphone - en français

Appendix III: HYDROmorphone Knowledge Assessment Survey Answer Key – English

Appendix IV: La clé de réponse du sondage d'évaluation de connaissances liés à l'HYDROmorphone - en français

Appendix V: Summary of Survey Responses

Appendix VI: HYDROmorphone Knowledge Assessment Survey Categories

Appendix VII: HYDROmorphone: Discovering What We Don't Know – Webinar Slides - English

Appendix VIII: HYDROmorphone: Découvrir ce dont on ne sait pas – diapositives du webinaire - en français

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## ***Appendix I: HYDROmorphone Knowledge Assessment Survey - English***



### **HYDROmorphone Knowledge Assessment Survey**

Please answer these questions to the best of your ability without consulting references. The survey is anonymous and is intended to assess health professionals' current state of knowledge about HYDROmorphone. .

What is your healthcare discipline?

- ☐ Nursing
- ☐ Pharmacy
- ☐ Medicine
- ☐ Other:

What type of nursing best describes your role? (Question to be answered by nurses only)

- ☐ RN
- ☐ LPN/RPN
- ☐ Nurse Practitioner
- ☐ Advanced Practice Nurse/Clinical Nurse Specialist
- ☐ Nursing Student
- ☐ Other:

Which of the following best describes your role? (Question to be answered by pharmacy staff only)

- ☐ Pharmacist
- ☐ Registered Pharmacy Technician
- ☐ Unregistered Pharmacy Technician/Pharmacy Assistant
- ☐ Pharmacy Student
- ☐ Pharmacy Resident
- ☐ Pharmacy Technician Student
- ☐ Other:

Which of the following best describes your role? (Question to be answered by physicians only)

- ☐ General Practitioner
- ☐ Specialist
- ☐ Medical Student
- ☐ Resident
- ☐ Other:

(From this point on all participants to answer all questions)

Do you have any advanced training in pain management?

- ☐ Yes
- ☐ No

Do you work on a pain management team (palliative care or acute pain)?

- ☐ Yes
- ☐ No

Does your hospital have a pain service (e.g., Acute Pain Management Service)?

- ☐ Yes
- ☐ No

How many years have you been practising?

- ☐ Less than 1 year
- ☐ 1 to 5 years
- ☐ 6 to 10 years
- ☐ 11 to 20 years
- ☐ 21 to 30 years
- ☐ More than 30 years

In what province or territory do you practice? - Need to list all provinces and territories (can be done as a drop down menu or as a multiple choice)

What is your primary location of practice?

- ☐ Tertiary/Quaternary care hospital
- ☐ Community hospital
- ☐ Long-term care facility
- ☐ Ambulatory care/Community setting (family physician, community pharmacist, community care nurse, etc.)
- ☐ Other:

**The following are the knowledge assessment questions.**

1. In an equipotent dose, HYDROmorphine is more potent than morphine.

- ☐ True
- ☐ False
- ☐ Unsure

2. A patient with an anaphylactic codeine allergy can safely receive HYDROmorphine.

- ☐ True
- ☐ False
- ☐ Unsure

3. HYDROmorphine can be given to a patient who has had a previous adverse reaction to morphine (e.g., nausea, vomiting, hallucinations).

- ☐ True
- ☐ False
- ☐ Unsure

4. HYDROmorphine is often used in the palliative care setting, but may also be used for acute pain.

- ☐ True
- ☐ False
- ☐ Unsure

5. 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

6. 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)

7. 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

8. 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 0.5-2 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

9. 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

10. 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

11. Naloxone has been administered to a patient to treat a HYDROmorphine 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 HYDROmorphine was given, repeat doses of naloxone may be required for up to 5 hours after administration.
- ☐ c) If too much long-acting HYDROmorphine 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 HYDROmorphine is your primary concern.

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

	Higher	Lower	Same
Obesity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
COPD	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Obstructive sleep apnea	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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"/>

13. 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

14. 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

15. 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

16. 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

17. Which of the following best describes the use of HYDROmorphine at your practice site?

- ☐ Rarely used
- ☐ Used less frequently than morphine
- ☐ Used with about the same frequency as morphine
- ☐ Used more frequently than morphine
- ☐ HYDROmorphine has almost completely replaced morphine

Provide space for general comments

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## ***Appendix II: Sondage d'évaluation de connaissances de l'HYDROmorphone - en français***



### **Sondage d'évaluation sur la connaissance de l'HYDROmorphone**

Veillez répondre au meilleur de vos connaissances sans consulter les références. Le sondage est anonyme et a pour but d'évaluer l'état des connaissances actuelles des professionnels de la santé sur l'HYDROmorphone.

Quelle est votre discipline professionnelle ?

- ☐ Soins infirmiers
- ☐ Pharmacie
- ☐ Médecine
- ☐ Autre : \_\_\_\_\_

Si vous avez répondu « soins infirmiers » ci-dessus, sélectionner la case qui décrit le mieux votre rôle :

- ☐ Infirmière
- ☐ Infirmière auxiliaire
- ☐ Infirmière praticienne/ conseillère en soins spécialisés
- ☐ Étudiante en soins infirmiers
- ☐ Autre : \_\_\_\_\_

Si vous avez répondu « pharmacie » ci-dessus, veuillez sélectionner la case qui décrit le mieux votre rôle :

- ☐ Pharmacien
- ☐ Assistant technique en pharmacie (ATP)
- ☐ Étudiant en pharmacie
- ☐ Résident en pharmacie
- ☐ ATP en formation
- ☐ Autre : \_\_\_\_\_

Si vous avez répondu « médecin » ci-dessus, veuillez sélectionner la case qui décrit le mieux votre rôle :

- ☐ Omnipraticien
- ☐ Spécialiste
- ☐ Résident en médecine

☐ Étudiant en médecine

☐ Autre : \_\_\_\_\_

Avez-vous reçu une formation avancée sur la gestion de la douleur ?

☐ Oui

☐ Non

Est-ce que vous travaillez sur une équipe de gestion de la douleur (p.ex., soins palliatifs ou douleur aiguë)?

☐ Oui

☐ Non

Combien d'années de pratique avez-vous ?

☐ Moins d'un an

☐ 1 à 5 ans

☐ 6 à 10 ans

☐ 11 à 20 ans

☐ 21 à 30 ans

☐ Plus de 30 ans

Dans quelle province pratiquez-vous?

☐ Alberta

☐ Colombie Britannique

☐ Manitoba

☐ Territoires du Nord-Ouest

☐ Nouveau Brunswick

☐ Terre Neuve et Labrador

☐ Nouvelle Écosse

☐ Nunavut

☐ Ontario

☐ Île du prince Édouard

☐ Québec

☐ Saskatchewan

☐ Yukon

Quel est votre lieu de pratique principal ?

- ☐ Centre hospitalier tertiaire
- ☐ Centre hospitalier communautaire
- ☐ Centre d'hébergement de soins de longue durée (CHSLD)
- ☐ Soins ambulatoires/communautaire (médecin de famille, pharmacien communautaire, infirmière en soins communautaires)
- ☐ Autre \_\_\_\_\_

#### QUESTIONS LIÉES À L'ÉVALUATION DES CONNAISSANCES

1. Selon une dose équipotente, l'HYDROmorphone est plus puissante que la morphine.
  - ☐ Vrai
  - ☐ Faux
  - ☐ Incertain
2. L'HYDROmorphone peut être utilisée chez un patient qui a eu une réaction indésirable antérieure à la morphine (ex. : nausée, vomissements ou hallucinations).
  - ☐ Vrai
  - ☐ Faux
  - ☐ Incertain
3. L'HYDROmorphone est utilisée couramment en soins palliatifs mais peut aussi être utilisée en soins de courte durée.
  - ☐ Vrai
  - ☐ Faux
  - ☐ Incertain
4. Quelle est la différence entre la morphine et l'HYDROmorphone ?
  - ☐ a) La morphine est la marque de commerce pour l'HYDROmorphone
  - ☐ b) L'HYDROmorphone est la marque de commerce pour la morphine
  - ☐ c) Les deux médicaments sont complètement différents et ont des usages différents
  - ☐ d) Les deux sont des narcotiques qui sont utilisés dans le traitement de la douleur, mais leur dosage est différent
  - ☐ e) L'HYDROmorphone est une « version diluée » de la morphine

5. En tenant compte de la différence entre l'HYDROmorphone et la morphine, lequel de ces ratios est le PLUS approprié ?
- ☐ HYDROmorphone 1 mg  $\approx$  morphine 1 mg (c.-à-d., elles sont les mêmes)
  - ☐ HYDROmorphone 1 mg  $\approx$  morphine 2 mg (c.-à-d., l'HYDROmorphone est plus puissante)
  - ☐ HYDROmorphone 1 mg  $\approx$  morphine 5 mg (c.-à-d., l'HYDROmorphone est plus puissante)
  - ☐ HYDROmorphone 2 mg  $\approx$  morphine 1 mg (c.-à-d., la morphine est plus puissante)
  - ☐ HYDROmorphone 5 mg  $\approx$  morphine 1 mg (c.-à-d., la morphine est plus puissante)
6. Quelle est la dose ORALE de départ appropriée d'HYDROmorphone pour un patient adulte qui n'a pas reçu d'opiacés durant le dernier mois?
- ☐ HYDROmorphone 1 à 2 mg PO q4h PRN
  - ☐ HYDROmorphone 5 à 10 mg PO q4h PRN
  - ☐ HYDROmorphone 10-20 mg PO q4h PRN
  - ☐ Tous les choix ci-dessus sont applicables
  - ☐ Aucun des choix ci-dessus n'est applicable
7. Quelle est la dose SOUS-CUTANÉE de départ appropriée d'HYDROmorphone pour un patient adulte qui n'a pas reçu d'opiacés durant le dernier mois ?
- ☐ HYDROmorphone 0,5 à 1 mg sous-cutanée q4h PRN
  - ☐ HYDROmorphone 2 à 5 mg sous-cutanée q4h PRN
  - ☐ HYDROmorphone 5 à 10 mg sous-cutanée q4h PRN
  - ☐ Tous les choix ci-dessus sont applicables
  - ☐ Aucun des choix ci-dessus n'est applicable
8. Parmi les choix suivants, quels sont les signes d'une surdose d'HYDROmorphone ?
- ☐ Constipation
  - ☐ Nausée et vomissements
  - ☐ Somnolence et diminution de la fréquence respiratoire
  - ☐ Douleur extrême
  - ☐ Tous les choix ci-dessus sont applicables

9. Parmi les patients suivants, lequel serait tolérant aux opiacés?

- ☐ a) Un patient qui reçoit un timbre de fentanyl 25 mcg/h qui est changé à chaque trois jours pour une période de trois mois
- ☐ b) Un patient qui a rempli, il y a deux semaines, une ordonnance de Tylenol no 3, 1 comprimé q4h PRN, pour une douleur à la jambe (prend un ou deux comprimés par jour).
- ☐ c) Un patient qui a été sur de la morphine longue action, 60 mg q12h pendant deux semaines.
- ☐ d) Choix « a » et « c »
- ☐ e) Tous les choix ci-dessus sont applicables

10. Du naloxone a été administré chez un patient qui a eu une surdose d'HYDROMORPHONE. Lequel de ces énoncés reliés au naloxone est FAUX ?

- ☐ a) Une augmentation de la transpiration est un signe que le naloxone fonctionne bien
- ☐ b) Si trop d'HYDROMORPHONE à courte action a été donnée, des doses répétées peuvent être requises jusqu'à 5 heures après l'administration
- ☐ c) Si trop d'HYDROMORPHONE longue action a été donnée, le patient devrait être surveillé dans les cinq heures suivant l'administration du naloxone
- ☐ d) Lors de la surveillance d'un patient ayant reçu du naloxone, votre préoccupation principale est la douleur issue du renversement de l'effet analgésique de l'HYDROMORPHONE

11. Pour chaque choix, indiquez si la dose de départ d'HYDROMORPHONE devrait être plus élevée, plus faible ou égale chez un patient adulte en santé (présumez que c'est un patient qui n'a jamais pris d'opiacés) :

	Plus élevée	Plus faible	Égale
<b>Patients obèses</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Patients avec MPOC</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Patients avec une apnée du sommeil obstructive</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Patient reçoit aussi une benzodiazépine (p.ex., lorazépam, diazépam)</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Patients âgés</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

12. Un patient reçoit jusqu'à présent 2 mg d'HYDROMORPHONE oralement de façon constante à toutes les quatre heures pour gérer la douleur avec un bon effet. Le patient a des vomissements et est incapable de garder le médicament ingéré dans son corps. Quelle serait la dose d'HYDROMORPHONE sous-cutanée la plus appropriée à administrer en ce moment ?

- ☐ a) HYDROMORPHONE 0,5 mg sous-cutanée, q4h
- ☐ b) HYDROMORPHONE 1 mg sous-cutanée, q4h
- ☐ c) HYDROMORPHONE 2 mg sous-cutanée, q4h
- ☐ d) HYDROMORPHONE 4 mg sous-cutanée, q4h

13. Un patient nouvellement admis a une ordonnance de 9 mg d'HYDROMORPHONE PO q12h et la prochaine dose devrait être administrée maintenant. L'inventaire de l'unité comprend des comprimés d'HYDROMORPHONE de 1 et de 2 mg de même que des comprimés d'HYDROMORPHONE de 3 mg à libération contrôlée. Les médicaments à domicile du patient ne sont pas disponibles et il ne sait pas exactement quelle sorte qu'il prenait à la maison. L'action appropriée en ce moment est de :

- ☐ a) Donner 9 mg d'HYDROMORPHONE (en utilisant une combinaison des comprimés de 1 et de 2 mg)
- ☐ b) Donner 9 mg d'HYDROMORPHONE à libération contrôlée (3 comprimés de 3 mg)
- ☐ c) Rejoindre la pharmacie pour obtenir une forme posologique plus appropriée
- ☐ d) Rejoindre le prescripteur pour clarifier s'il avait l'intention que le produit soit à libération immédiate ou à libération contrôlée

14. Un patient en pédiatrie a reçu une ordonnance de 400 mcg d'HYDROMORPHONE IV et vous avez à votre disposition des fioles de 1mL d'HYDROMORPHONE 2mg/mL. Quel volume d'HYDROMORPHONE 2mg/mL contient la dose appropriée?

- ☐ a) 200 mL
- ☐ b) 20 mL
- ☐ c) 2 mL
- ☐ d) 0,2 mL
- ☐ e) 0,02 mL

15. Un patient a reçu une ordonnance de 6 mg d'Hydromorph Contin oralement q12h (10h et 22h) ainsi que 2 mg de Dilaudid q4h PRN pour un accès douloureux paroxystique. À 10 h, 6 mg d'HYDROmorphone à libération immédiate est administrée au patient. Quel type de réponse clinique attendez-vous?

- ☐ a) Un contrôle approprié de la douleur (en autant que le prescripteur ait donné la bonne dose)
- ☐ b) Une diminution du niveau de conscience et de la fréquence respiratoire
- ☐ c) Des plaintes de douleur continue dans l'après-midi
- ☐ d) Une augmentation immédiate de la douleur
- ☐ e) Choix « b » et « c »

Dans votre lieu de pratique, lequel de ces énoncés décrit le mieux la fréquence d'utilisation de l'HYDROmorphone ?

- ☐ Rarement utilisée
- ☐ Utilisée moins fréquemment que la morphine
- ☐ Utilisée à la même fréquence que la morphine
- ☐ Utilisée plus fréquemment que la morphine
- ☐ L'HYDROmorphone a complètement remplacé la morphine

**MERCI D'AVOIR PARTICIPÉ AU SONDAGE. UTILISEZ L'ESPACE RÉSERVÉ CI-DESSOUS POUR LES COMMENTAIRES.**

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### ***Appendix III: HYDROmorphone Knowledge Assessment Survey Answer Key – English***

1. In an equipotent dose, HYDROmorphone is more potent than morphine.

- ☐ True
- ☒ False
- ☐ Unsure

**The answer is false. Equipotent doses should be equally effective. Another way of expressing “equipotent” is “equianalgesic”.**

2. HYDROmorphone can be given to a patient who has had a previous adverse reaction to morphine (e.g., nausea, vomiting, hallucinations).

- ☒ True
- ☐ False
- ☐ Unsure

**The answer is true. Patients who have experienced adverse reactions or have demonstrated an intolerance to morphine that is not a true allergy may be safely given HYDROmorphone.**

3. HYDROmorphone is often used in the palliative care setting, but may also be used for acute pain.

- ☒ True
- ☐ False
- ☐ Unsure

**The answer is true. Many practitioners who rarely use HYDROmorphone may still see HYDROmorphone 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 difference between morphine and HYDROmorphone is:

- ☐ a) Morphine is a brand name for HYDROmorphone
- ☒ b) HYDROmorphone 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

**The answer is d). The purpose of this question was to identify if there are practitioners who are confused by the similarity in the drug names and recognize that morphine and HYDROmorphine are two different drugs but are both opioid analgesics.**

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)

**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. 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

**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. 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 0.5-2 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

**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 that subcutaneous dosing is more potent than oral. The choice of a) also takes into consideration the opioid status (naïve) of the patient.**

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

**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. 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

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. Naloxone has been administered to a patient to treat a HYDROmorphine 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 HYDROmorphine was given, repeat doses of naloxone may be required for up to 5 hours after administration.
- ☐ c) If too much long-acting HYDROmorphine 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 HYDROmorphine is your primary concern.

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 60 – 120 minutes. HYDROmorphine immediate release has a duration of action of 4 to 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 sweating is a side effect and not a marker of efficacy of naloxone. Answer c) is incorrect as long acting HYDROmorphine may require repeated naloxone administration and monitoring for more than 12 hours.

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

	Higher	Lower	Same
Obesity	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
COPD	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Obstructive sleep apnea	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Also receiving a benzodiazepine (e.g., diazepam, lorazepam)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Elderly patients	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

The answer to all of the above 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 purpose of this question is to assess if practitioners recognize the impact of comorbidities/concomitant medications on dosing of HYDROmorphine.

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

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 mg to 1 mg of the subcutaneous dose.

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

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 regular 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. 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

The answer is d). The purpose of this question is to assess the calculation skills of the practitioner; although the question involves pediatric dosing, the intent is not to assess knowledge of correct doses of HYDROmorphine for pediatrics. The math is:

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

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

$$X = (0.4 \text{ mg} \times 1 \text{ mL}) \text{ divided by } 2 \text{ mg}$$
$$X = 0.2 \text{ mL}$$

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

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 HYDROmorphine. The question also tests

whether practitioners recognize the difference in immediate effect from an immediate release product versus the long acting form. Lastly 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 regular release HYDROmorphone, ordered as Dilaudid®. Administration of 6 mg of an immediate release formulation would provide release of 3 times the usual breakthrough dose of HYDROmorphone resulting in potentially toxic side effects of a decrease in 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 to 5 hours and would not have provided sustained analgesia much beyond 1400 h.

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## ***Appendix IV: La clé de réponse du sondage d'évaluation de connaissances liés à l'HYDROmorphone - en français***



### **Sondage d'évaluation sur la connaissance de l'HYDROmorphone**

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Le sondage est anonyme et a pour but d'évaluer l'état des connaissances actuelles des professionnels de la santé sur l'HYDROmorphone.

#### **QUESTIONS LIÉES À L'ÉVALUATION DES CONNAISSANCES**

1. Selon une dose équipotente, l'HYDROmorphone est plus puissante que la morphine.

- ☐ Vrai  
☒ Faux  
☐ Incertain

**La bonne réponse est "faux". Des doses équipotentes devraient être également efficaces. Un terme semblable à "equipotent" serait "équianalgésique".**

2. L'HYDROmorphone peut être utilisée chez un patient qui a eu une réaction indésirable antérieure à la morphine (ex. : nausée, vomissements ou hallucinations).

- ☒ Vrai  
☐ Faux  
☐ Incertain

**La bonne réponse est "vrai". Les patients qui ont eu des réactions indésirables ou qui ont démontré une intolérance à la morphine (qui n'est pas considérée comme une vraie allergie) peuvent donc recevoir de l'HYDROmorphone en toute sécurité.**

3. L'HYDROmorphone est utilisée couramment en soins palliatifs mais peut aussi être utilisée en soins de courte durée.

- ☒ Vrai  
☐ Faux  
☐ Incertain

**La bonne réponse est “vrai”. Beaucoup de professionnels de la santé qui emploient peu souvent l’HYDROmorphone peuvent la considérer comme étant associée aux « douleurs liées au cancer ou à d’autres soins palliatifs ». Mais il peut être utilisé pour des douleurs modérées à graves peu importe le contexte. C’est souvent l’opiacé de choix pour les patients qui ont une fonction rénale ou hépatique compromise.**

4. Quelle est la différence entre la morphine et l’HYDROmorphone ?

- ☐ a) La morphine est la marque de commerce pour l’HYDROmorphone
- ☐ b) L’HYDROmorphone est la marque de commerce pour la morphine
- ☐ c) Les deux médicaments sont complètement différents et ont des usages différents
- ☒ d) Les deux sont des narcotiques qui sont utilisés dans le traitement de la douleur, mais leur dosage est différent
- ☐ e) L’HYDROmorphone est une « version diluée » de la morphine

**La bonne réponse est « d ». L’intention de la question est de voir si les professionnels de la santé sont confondus par la consonance semblable entre les deux noms et de reconnaître que la morphine et l’HYDROmorphone sont deux médicaments différents même s’ils sont tous les deux des opiacés analgésiques.**

5. En tenant compte de la différence entre l’HYDROmorphone et la morphine, lequel de ces ratios est le PLUS approprié ?

- ☐ a) HYDROmorphone 1 mg  $\approx$  morphine 1 mg (c.-à-d., elles sont les mêmes)
- ☐ b) HYDROmorphone 1 mg  $\approx$  morphine 2 mg (c.-à-d., l’HYDROmorphone est plus puissante)
- ☒ c) HYDROmorphone 1 mg  $\approx$  morphine 5 mg (c.-à-d., l’HYDROmorphone est plus puissante)
- ☐ d) HYDROmorphone 2 mg  $\approx$  morphine 1 mg (c.-à-d., la morphine est plus puissante)
- ☐ e) HYDROmorphone 5 mg  $\approx$  morphine 1 mg (c.-à-d., la morphine est plus puissante)

**La bonne réponse est « c ». L’intention de la question est de déterminer si les professionnels de la santé reconnaissent que l’HYDROmorphone est beaucoup plus puissante que la morphine. Il est reconnu que le ratio de conversion peut se situer entre « 1 :4 » et « 1 :9 », d’où le libellé de la question « PLUS approprié ».**

6. Quelle est la dose ORALE de départ appropriée d'HYDROmorphone pour un patient adulte qui n'a pas reçu d'opiacés durant le dernier mois?

- ☒ a) HYDROmorphone 1 à 2 mg PO q4h PRN
- ☐ b) HYDROmorphone 5 à 10 mg PO q4h PRN
- ☐ c) HYDROmorphone 10-20 mg PO q4h PRN
- ☐ d) Tous les choix ci-dessus sont applicables
- ☐ e) Aucun des choix ci-dessus n'est applicable

**La bonne réponse est « a ». L'intention de la question est de déterminer si les professionnels de la santé sont en mesure de distinguer la dose de départ habituelle de la morphine (5 mg) versus la dose de départ habituelle de l'HYDROmorphone (habituellement entre 0,5 et 2 mg), et ce, pour les adultes. Le choix de réponse tient aussi compte du niveau de « naïveté » aux opiacés du patient.**

7. Quelle est la dose SOUS-CUTANÉE de départ appropriée d'HYDROmorphone pour un patient adulte qui n'a pas reçu d'opiacés durant le dernier mois ?

- ☒ a)HYDROmorphone 0,5 à 1 mg sous-cutanée q4h PRN
- ☐ b) HYDROmorphone 2 à 5 mg sous-cutanée q4h PRN
- ☐ c) HYDROmorphone 5 à 10 mg sous-cutanée q4h PRN
- ☐ d) Tous les choix ci-dessus sont applicables
- ☐ e)Aucun des choix ci-dessus n'est applicable

**La bonne réponse est « a ». L'intention de la question est de déterminer si les professionnels de la santé sont en mesure de distinguer les doses de départ habituelles de la morphine versus les doses de départ habituelles de l'HYDROmorphone tout en évaluant la compréhension que le dosage sous-cutanée est plus puissant que le dosage oral. Le choix de réponse tient aussi compte du niveau de « naïveté » aux opiacés du patient.**

8. Parmi les choix suivants, quels sont les signes d'une surdose d'HYDROmorphone ?

- ☐ a)Constipation
- ☐ b) Nausée et vomissements
- ☒ c)Somnolence et diminution de la fréquence respiratoire
- ☐ d) Douleur extrême
- ☐ e)Tous les choix ci-dessus sont applicables

**La bonne réponse est « c ». L'intention de la question est de déterminer si les professionnels de la santé sont en mesure de distinguer les signes reliés aux effets secondaires (choix de réponse « a » et « b ») et au sous dosage (choix de réponse « d ») versus les signes d'une surdose.**

9. Parmi les patients suivants, lequel serait tolérant aux opiacés?

- ☐ a) Un patient qui reçoit un timbre de fentanyl 25 mcg/h qui est changé à chaque trois jours pour une période de trois mois
- ☐ b) Un patient qui a rempli, il y a deux semaines, une ordonnance de Tylenol no 3, 1 comprimé q4h PRN, pour une douleur à la jambe (prend un ou deux comprimés par jour).
- ☐ c) Un patient qui a été sur de la morphine longue action, 60 mg q12h pendant deux semaines.
- ☒ d) Choix « a » et « c »
- ☐ e) Tous les choix ci-dessus sont applicables

**La bonne réponse est « d ». L'intention de la question est de déterminer si les professionnels de la santé peuvent reconnaître le régime posologique (la dose et la fréquence) requis pour induire une tolérance aux opiacés. Même si le régime posologique dans le choix de réponse « b » est suffisant pour induire une tolérance aux opiacés, cependant, le niveau d'utilisation actuelle était insuffisant pour générer une telle tolérance.**

10. Du naloxone a été administré chez un patient qui a eu une surdose d'HYDROMORPHONE. Lequel de ces énoncés reliés au naloxone est FAUX ?

- ☐ a) Une augmentation de la transpiration est un signe que le naloxone fonctionne bien
- ☒ b) Si trop d'HYDROMORPHONE à courte action a été donnée, des doses répétées peuvent être requises jusqu'à 5 heures après l'administration
- ☐ c) Si trop d'HYDROMORPHONE longue action a été donnée, le patient devrait être surveillé dans les cinq heures suivant l'administration du naloxone
- ☐ d) Lors de la surveillance d'un patient ayant reçu du naloxone, votre préoccupation principale est la douleur issue du renversement de l'effet analgésique de l'HYDROMORPHONE

**La bonne réponse est « b ». L'intention de la question est de déterminer si les professionnels de la santé comprennent que le naloxone a une durée d'action plus courte que l'HYDROMORPHONE. Lorsque le naloxone est administré par voie intraveineuse, sa durée**

d'action se situe entre 20 et 90 minutes alors que lorsqu'il est administré par voie intramusculaire, sa durée d'action se situe entre 60 et 120 minutes. L'HYDROMORPHONE à libération immédiate a une durée d'action entre 4 et 5 heures alors que la formulation à action prolongée a une durée d'action qui se situe entre 8 et 12 heures. L'autre intention de la question est de déterminer si les professionnels de la santé reconnaissent que la transpiration est un effet secondaire et non un marqueur de l'efficacité du naloxone. Le choix de réponse « c » est incorrect puisque l'HYDROMORPHONE à action prolongée peut nécessiter une administration répétée de naloxone ainsi que de la surveillance pour une période de plus de 12 heures.

11. Pour chaque choix, indiquez si la dose de départ d'HYDROMORPHONE devrait être plus élevée, plus faible ou égale chez un patient adulte en santé (présumez que c'est un patient qui n'a jamais pris d'opiacés) :

	Plus élevée	Plus faible	Égale
Patients obèses	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Patients avec MPOC	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Patients avec une apnée du sommeil obstructive	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Patient reçoit aussi une benzodiazépine (p.ex., lorazépam, diazépam)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Patients âgés	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

La bonne réponse pour l'ensemble des choix est « plus faible ». Le choix de réponse « égale » est aussi accepté pour « obésité ». L'obésité est souvent associée à l'apnée du sommeil qui pourrait nécessiter une diminution de la dose d'HYDROMORPHONE. Cependant, en l'absence d'apnée du sommeil concomitant, la dose peut demeurer la même. L'intention de cette question est d'évaluer si les professionnels de la santé sont en mesure de reconnaître l'impact des co morbidités et de la médication concomitante sur le dosage de l'HYDROMORPHONE.

12. Un patient reçoit jusqu'à présent 2 mg d'HYDROMORPHONE oralement de façon constante à toutes les quatre heures pour gérer la douleur avec un bon effet. Le patient a des vomissements et est incapable de garder le médicament ingéré dans son corps. Quelle serait la dose d'HYDROMORPHONE sous-cutanée la plus appropriée à administrer en ce moment ?

- ☒ a) HYDROmorphone 0,5 mg sous-cutanée, q4h
- ☒ b) HYDROmorphone 1 mg sous-cutanée, q4h
- ☐ c) HYDROmorphone 2 mg sous-cutanée, q4h
- ☐ d) HYDROmorphone 4 mg sous-cutanée, q4h

**Les bonnes réponses peuvent être « a » ou « b ». L'intention de la question est d'évaluer si les professionnels de la santé sont en mesure de reconnaître que l'HYDROmorphone parentérale est plus puissante que la version orale. Le facteur de conversion du dosage oral à sous-cutanée le plus couramment accepté pour l'HYDROmorphone varie entre 4 :1 à 2 :1. Alors, une dose orale de 2 mg d'HYDROmorphone peut être équivalente à 0,5 à 1 mg de la dose sous-cutanée.**

13. Un patient nouvellement admis a une ordonnance de 9 mg d'HYDROmorphone PO q12h et la prochaine dose devrait être administrée maintenant. L'inventaire de l'unité comprend des comprimés d'HYDROmorphone de 1 et de 2 mg de même que des comprimés d'HYDROmorphone de 3 mg à libération contrôlée. Les médicaments à domicile du patient ne sont pas disponibles et il ne sait pas exactement quelle sorte qu'il prenait à la maison. L'action appropriée en ce moment est de :

- ☐ a) Donner 9 mg d'HYDROmorphone (en utilisant une combinaison des comprimés de 1 et de 2 mg)
- ☐ b) Donner 9 mg d'HYDROmorphone à libération contrôlée (3 comprimés de 3 mg)
- ☐ c) Rejoindre la pharmacie pour obtenir une forme posologique plus appropriée
- ☒ d) Rejoindre le prescripteur pour clarifier s'il avait l'intention que le produit soit à libération immédiate ou à libération contrôlée

**La meilleure réponse est « d ». L'intention de la question est d'évaluer si les professionnels de la santé sont en mesure de reconnaître qu'une fréquence de q12h n'est pas un intervalle de dosage approprié pour de l'HYDROmorphone à libération régulière. Il est reconnu que certains pharmaciens aient pu sélectionner le choix de réponse « b » en fonction des politiques organisationnelles spécifiques qui permettent aux pharmaciens de délivrer un produit alternatif accompagné d'une note clarifiant leur justification. Cependant, le choix de réponse le plus sécuritaire serait « d ».**

14. Un patient en pédiatrie a reçu une ordonnance de 400 mcg d'HYDROMORPHONE IV et vous avez à votre disposition des fioles de 1mL d'HYDROMORPHONE 2mg/mL. Quel volume d'HYDROMORPHONE 2mg/mL contient la dose appropriée?

- ☐ a) 200 mL
- ☐ b) 20 mL
- ☐ c) 2 mL
- ☒ d) 0,2 mL
- ☐ e) 0,02 mL

**La bonne réponse est « d ». L'intention de la question est d'évaluer les habiletés de calcul du professionnel de la santé. Même si la question fait référence à un dosage en pédiatrie, l'intention n'est pas d'évaluer la connaissance des doses appropriées d'HYDROMORPHONE en pédiatrie. Voici le calcul :**

**Comprendre que 400 mcg = 0,4 mg**

**2 mg = 0,4 mg**

**1mL      x mL**

**$x = (1 \text{ mL} \times 0,4 \text{ mg}) / 2 \text{ mg}$**

**$x=0,2 \text{ mL}$**

15. Un patient a reçu une ordonnance de 6 mg d'Hydromorph Contin oralement q12h (10h et 22h) ainsi que 2 mg de Dilaudid q4h PRN pour un accès douloureux paroxystique. À 10 h, 6 mg d'HYDROMORPHONE à libération immédiate est administrée au patient. Quel type de réponse clinique attendez-vous?

- ☐ a) Un contrôle approprié de la douleur (en autant que le prescripteur ait donné la bonne dose)
- ☐ b) Une diminution du niveau de conscience et de la fréquence respiratoire
- ☐ c) Des plaintes de douleur continue dans l'après-midi
- ☐ d) Une augmentation immédiate de la douleur
- ☒ e) Choix « b » et « c »

**La bonne réponse est « e ». Le patient aurait éprouvé une diminution de l'état de conscience et de la fréquence respiratoire ainsi que de la douleur continue durant l'après-midi. L'intention de la question est d'évaluer si le professionnel de la santé est en mesure**

d'identifier la durée d'action et l'effet entre un opiacé de longue durée tel que l'Hydromorph Contin<sup>MD</sup> (HYDROmorphone à action prolongée) et de l'HYDROmorphone à libération immédiate. La question permet aussi d'évaluer si les professionnels de la santé reconnaissent la différence entre l'effet d'un produit à libération immédiate d'un produit à action prolongée. Et finalement, la question permet aussi d'évaluer que le Dilaudid<sup>MD</sup> est une forme à libération immédiate de l'HYDROmorphone.

Le patient devait recevoir 6 mg d'HYDROmorphone à action prolongée, ce qui permettrait une libération lente sur une période de 8 à 12 heures. Le patient avait aussi une ordonnance de 2 mg d'HYDROmorphone à libération régulière, prescrit sous le nom Dilaudid<sup>MD</sup>. L'administration de 6 mg d'HYDROmorphone à libération immédiate mènerait à une libération de trois fois la dose efficace d'HYDROmorphone résultant en des effets secondaires potentiellement toxiques dont une diminution de l'état de conscience, de même que la fréquence respiratoire ainsi qu'une plainte de douleur plus tard dans la journée. L'HYDROmorphone à libération immédiate a une durée d'action qui se situe entre 4 et 5 heures et n'aurait pas fourni une analgésie soutenue au-delà de 14 heures de l'après-midi.



## Appendix V: Summary of Survey Responses

(Correct answers are highlighted in yellow)

	Nursing (All)		Pharmacy (All)		Medicine (All)	
<b>1 In an equipotent dose, HYDROmorphine is more potent than morphine.</b>						
TRUE	1680	77.46%	518	53.51%	143	47.83%
FALSE	366	16.87%	409	42.25%	140	46.82%
Unsure	123	5.67%	41	4.24%	16	5.35%
Total	2169		968		299	
<b>2 HYDROmorphine can be given to a patient who has had a previous adverse reaction to morphine (e.g., nausea, vomiting, hallucinations).</b>						
TRUE	1431	65.98%	710	73.35%	256	85.62%
FALSE	512	23.61%	182	18.80%	21	7.02%
Unsure	226	10.42%	76	7.85%	22	7.36%
Total	2169		968		299	
<b>3 HYDROmorphine is often used in the palliative care setting, but may also be used for acute pain.</b>						
TRUE	2021	93.18%	912	94.21%	287	95.99%
FALSE	84	3.87%	43	4.44%	6	2.01%
Unsure	64	2.95%	13	1.34%	6	2.01%
Total	2169		968		299	
<b>4 The difference between morphine and HYDROmorphine is:</b>						
Morphine is a brand name for HYDROmorphine	4	0.18%	2	0.21%	0	0.00%
HYDROmorphine is a brand name for morphine	2	0.09%	1	0.10%	0	0.00%
They are two completely different medications with different uses	127	5.86%	15	1.55%	5	1.67%
Both are opioid medications used to treat pain but are dosed differently	2030	93.59%	947	97.83%	293	97.99%
HYDROmorphine is "watered-down" morphine	6	0.28%	3	0.31%	1	0.33%
Total	2169		968		299	
<b>5 When considering the difference between HYDROmorphine and morphine, which of the following ratios is MOST appropriate?</b>						
HYDROmorphine 1 mg ≈ morphine 1 mg (i.e., they are the same)	14	0.65%	3	0.31%	3	1.00%
HYDROmorphine 1 mg ≈ morphine 2 mg (i.e., HYDROmorphine is stronger)	193	8.90%	49	5.06%	10	3.34%
HYDROmorphine 1 mg ≈ morphine 5 mg (i.e., HYDROmorphine is stronger)	1854	85.48%	894	92.36%	275	91.97%
HYDROmorphine 2 mg ≈ morphine 1 mg (i.e., morphine is stronger)	56	2.58%	8	0.83%	6	2.01%
HYDROmorphine 5 mg ≈ morphine 1 mg (i.e., morphine is stronger)	52	2.40%	14	1.45%	5	1.67%
Total	2169		968		299	

	Nursing (All)		Pharmacy (All)		Medicine (All)		
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?						
	HYDROmorphine 1-2 mg PO q4h PRN	1912	88.15%	892	92.15%	277	92.64%
	HYDROmorphine 5-10 mg PO q4h PRN	57	2.63%	6	0.62%	7	2.34%
	HYDROmorphine 10-20 mg PO q4h PRN	5	0.23%	0	0.00%	1	0.33%
	Any of the above	7	0.32%	2	0.21%	0	0.00%
	None of the above	188	8.67%	68	7.02%	14	4.68%
	Total	2169		968		299	
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?						
	HYDROmorphine 0.5-2 mg subcutaneously q4h PRN	1789	82.48%	836	86.36%	271	90.64%
	HYDROmorphine 2-5 mg subcutaneously q4h PRN	197	9.08%	37	3.82%	13	4.35%
	HYDROmorphine 5-10 mg subcutaneously q4h PRN	3	0.14%	1	0.10%	1	0.33%
	Any of the above	14	0.65%	3	0.31%	0	0.00%
	None of the above	166	7.65%	91	9.40%	14	4.68%
	Total	2169		968		299	
8	Which of the following are sign(s) of HYDROmorphine overdose?						
	Constipation	3	0.14%	0	0.00%	0	0.00%
	Nausea and vomiting	14	0.65%	9	0.93%	0	0.00%
	Somnolence and decreased respiratory rate	1871	86.26%	826	85.33%	228	76.25%
	Extreme pain	1	0.05%	1	0.10%	0	0.00%
	All of the above	280	12.91%	132	13.64%	71	23.75%
	Total	2169		968		299	
9	Which of the following patients would you consider to be opioid tolerant?						
	A patient who has been receiving a fentanyl patch, 25 mcg/hour, changed q3days for 3 months	251	11.57%	153	15.81%	29	9.70%
	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)	9	0.41%	2	0.21%	0	0.00%
	A patient who has been on long-acting morphine, 60 mg q12h, for 2 weeks	127	5.86%	26	2.69%	10	3.34%
	a and c	1571	72.43%	717	74.07%	237	79.26%
	All of the above	211	9.73%	70	7.23%	23	7.69%
	Total	2169		968		299	

		Nursing (All)		Pharmacy (All)		Medicine (All)	
10	Naloxone has been administered to a patient to treat a HYDROmorphine overdose. Which of the statements regarding naloxone is TRUE?						
	Increased sweating is a sign that the naloxone is working well.	47	2.17%	37	3.82%	5	1.67%
	If too much immediate-release HYDROmorphine was given, repeat doses of naloxone may be required for up to 5 hours after administration.	580	26.74%	298	30.79%	151	50.50%
	If too much long-acting HYDROmorphine was given, you should monitor the patient for 5 hours after the naloxone was given.	764	35.22%	451	46.59%	120	40.13%
	In monitoring a patient who has received naloxone, pain as a result of reversing the analgesic effect of HYDROmorphine is your primary concern.	778	35.87%	182	18.80%	23	7.69%
	<b>Total</b>	2169		968		299	
11	For each of the following situations, indicate if the starting dose of HYDROmorphine should be higher, lower, or the same for an otherwise healthy adult patient (assume that the patient is opioid naïve):						
	<b>Obesity</b>						
	Higher	818	37.84%	223	23.18%	62	20.81%
	Lower	151	6.98%	42	4.37%	51	17.11%
	Same	1193	55.18%	697	72.45%	185	62.08%
	<b>Total</b>	2162		962		298	
	<b>Collate Lower &amp; Same</b>	1344	62.16%	739	76.82%	236	79.19%
	<b>COPD</b>						
	Higher	21	0.97%	4	0.41%	1	0.33%
	Lower	1578	72.99%	765	79.27%	233	77.93%
	Same	563	26.04%	196	20.31%	65	21.74%
	<b>Total</b>	2162		965		299	
	<b>Obstructive sleep apnea</b>						
	Higher	5	0.23%	4	0.41%	0	0.00%
	Lower	1831	84.61%	836	86.54%	262	87.63%
	Same	328	15.16%	126	13.04%	37	12.37%
	<b>Total</b>	2164		966		299	
	<b>Also receiving a benzodiazepine</b>						
	Higher	51	2.36%	10	1.04%	4	1.34%
	Lower	1640	76.03%	764	79.09%	258	86.29%
	Same	466	21.60%	192	19.88%	37	12.37%
	<b>Total</b>	2157		966		299	
	<b>Elderly patients</b>						
	Higher	1	0.05%	2	0.21%	0	0.00%
	Lower	2066	95.56%	930	96.37%	295	99.33%
	Same	95	4.39%	33	3.42%	2	0.67%
	<b>Total</b>	2162		965		297	

		Nursing (All)		Pharmacy (All)		Medicine (All)	
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?						
	HYDROmorphine 0.5 mg subcutaneously q4h	607	27.99%	275	28.41%	95	31.77%
	HYDROmorphine 1 mg subcutaneously q4h	1172	54.03%	601	62.09%	190	63.55%
	HYDROmorphine 2 mg subcutaneously q4h	356	16.41%	85	8.78%	11	3.68%
	HYDROmorphine 4 mg subcutaneously q4h	34	1.57%	7	0.72%	3	1.00%
	Total	2169		968		299	
	Aggregate answer a) and b)	1779	82.02%	876	90.50%	285	95.32%
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:						
	Give HYDROmorphine 9 mg (using a combination of 1 mg and 2 mg tablets)	188	8.67%	24	2.48%	13	4.35%
	Give HYDROmorphine CR 9 mg (3 × 3 mg capsules)	148	6.82%	292	30.17%	55	18.39%
	Contact the pharmacy to obtain a more appropriate dosage form	204	9.41%	40	4.13%	32	10.70%
	Contact the prescriber to clarify if she intended the immediate-release or the controlled-release product	1629	75.10%	612	63.22%	199	66.56%
	Total	2169		968		299	
	Aggregate answer b) and c)	1777	81.93%	904	93.39%	254	84.95%
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?						
	200 mL	14	0.65%	1	0.10%	1	0.33%
	20 mL	12	0.55%	2	0.21%	5	1.67%
	2 mL	111	5.12%	16	1.65%	4	1.34%
	0.2 mL	1476	68.05%	915	94.52%	276	92.31%
	0.02 mL	556	25.63%	34	3.51%	13	4.35%
	Total	2169		968		299	

		Nursing (All)		Pharmacy (All)		Medicine (All)	
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?						
	Appropriate pain control (provided the prescriber got the dose right)	420	19.36%	74	7.64%	19	6.35%
	A decrease in level of consciousness and respiratory rate	414	19.09%	102	10.54%	52	17.39%
	A report of on-going pain in the afternoon	233	10.74%	187	19.32%	45	15.05%
	An immediate increase in pain	18	0.83%	4	0.41%	3	1.00%
	b and c	1084	49.98%	601	62.09%	180	60.20%
	Total	2169		968		299	
16	Which of the following best describes the use of HYDROmorphine at your practice site?						
	Rarely used	173	7.98%	73	7.54%	19	6.35%
	Used less frequently than morphine	430	19.82%	205	21.18%	61	20.40%
	Used with about the same frequency as morphine	593	27.34%	334	34.50%	96	32.11%
	Used more frequently than morphine	668	30.80%	292	30.17%	94	31.44%
	HYDROmorphine has almost completely replaced morphine	305	14.06%	64	6.61%	29	9.70%
	Total	2169		968		299	

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## Appendix VI: HYDROmorphine Knowledge Assessment Survey Categories

Categories:

- I. **Pharmacology** – Knowledge of differences in onset and duration of action between sustained release and immediate / regular release formulations, monitoring based on duration of action, relationship between opioids and rescue agents.
- II. **Indication** – Knowledge of indications for use of HYDROmorphine
- III. **Adverse effects** – Knowledge of side effects, toxicity, overdose.
- IV. **Dosing** – Knowledge of starting doses of both HYDROmorphine and morphine, conversion factors between the two drugs, oral versus parenteral dose conversions, doses required to produce tolerance and impact of concomitant drug therapies or disease states.
- V. **Difference** - Ability to distinguish difference between HYDROmorphine and morphine with reference to potency, names.
- VI. **Calculations** – Ability to do mathematical calculations relevant to opioid drug products and determination of dose to be administered.

Category	Question
Pharmacology	<p>10. Naloxone has been administered to a patient to treat a HYDROmorphine overdose. Which of the statements regarding <u>naloxone</u> is TRUE?</p> <p><input type="checkbox"/> a) Increased sweating is a sign that the naloxone is working well.</p> <p><input checked="" type="checkbox"/> b) If too much immediate-release HYDROmorphine was given, repeat doses of naloxone may be required for up to 5 hours after administration.</p> <p><input type="checkbox"/> c) If too much long-acting HYDROmorphine was given, you should monitor the patient for 5 hours after the naloxone was given.</p> <p><input type="checkbox"/> d) In monitoring a patient who has received naloxone, pain as a result of reversing the analgesic effect of HYDROmorphine is your primary concern.</p>
	<p>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:</p> <p><input type="checkbox"/> a) Give HYDROmorphine 9 mg (using a combination of 1 mg and 2 mg tablets)</p> <p><input type="checkbox"/> b) Give HYDROmorphine CR 9 mg (3 × 3 mg capsules)</p> <p><input type="checkbox"/> c) Contact the pharmacy to obtain a more appropriate dosage form</p> <p><input checked="" type="checkbox"/> d) Contact the prescriber to clarify if she intended the immediate-release or the controlled-release product</p>


Category	Question
Pharmacology	<p>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?</p> <p><input type="checkbox"/> a) Appropriate pain control (provided the prescriber got the dose right)</p> <p><input type="checkbox"/> b) A decrease in level of consciousness and respiratory rate</p> <p><input type="checkbox"/> c) A report of ongoing pain in the afternoon</p> <p><input type="checkbox"/> d) An immediate increase in pain</p> <p><input checked="" type="checkbox"/> e) b and c</p>
Indications	<p>3. HYDROmorphine is often used in the palliative care setting, but may also be used for acute pain.</p> <p><input checked="" type="checkbox"/> True</p> <p><input type="checkbox"/> False</p> <p><input type="checkbox"/> Unsure</p>
Adverse Effects	<p>2. HYDROmorphine can be given to a patient who has had a previous adverse reaction to morphine (e.g., nausea, vomiting, hallucinations).</p> <p><input checked="" type="checkbox"/> True</p> <p><input type="checkbox"/> False</p> <p><input type="checkbox"/> Unsure</p> <p>8. Which of the following are sign(s) of HYDROmorphine overdose?</p> <p><input type="checkbox"/> a) Constipation</p> <p><input type="checkbox"/> b) Nausea and vomiting</p> <p><input checked="" type="checkbox"/> c) Somnolence and decreased respiratory rate</p> <p><input type="checkbox"/> d) Extreme pain</p> <p><input type="checkbox"/> e) All of the above</p>
Dosing	<p>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?</p> <p><input checked="" type="checkbox"/> a) HYDROmorphine 1-2 mg PO q4h PRN</p> <p><input type="checkbox"/> b) HYDROmorphine 5-10 mg PO q4h PRN</p> <p><input type="checkbox"/> c) HYDROmorphine 10-20 mg PO q4h PRN</p> <p><input type="checkbox"/> d) Any of the above</p> <p><input type="checkbox"/> e) None of the above</p>



Category	Question																							
Dosing	<p>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?</p> <p><input type="radio"/> a) HYDROmorphine 0.5-2 mg subcutaneously q4h PRN</p> <p><input type="radio"/> b) HYDROmorphine 2-5 mg subcutaneously q4h PRN</p> <p><input type="radio"/> c) HYDROmorphine 5-10 mg subcutaneously q4h PRN</p> <p><input type="radio"/> d) Any of the above</p> <p><input type="radio"/> e) None of the above</p>																							
	<p>9. Which of the following patients would you consider to be opioid tolerant?</p> <p><input type="radio"/> a) A patient who has been receiving a fentanyl patch, 25 mcg/hour, changed q3days for 3 months</p> <p><input type="radio"/> 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)</p> <p><input type="radio"/> c) A patient who has been on long-acting morphine, 60 mg q12h, for 2 weeks</p> <p><input checked="" type="radio"/> d) a and c</p> <p><input type="radio"/> e) All of the above</p>																							
	<p>11. For each of the following situations, indicate if the starting dose of HYDROmorphine should be higher, lower, or the same for an otherwise healthy adult patient (assume that the patient is opioid naïve):</p> <table><thead><tr><th></th><th>Higher</th><th>Lower</th><th>Same</th></tr></thead><tbody><tr><td>Obesity</td><td><input type="radio"/></td><td><input type="radio"/></td><td><input checked="" type="radio"/></td></tr><tr><td>COPD</td><td><input type="radio"/></td><td><input checked="" type="radio"/></td><td><input type="radio"/></td></tr><tr><td>Obstructive sleep apnea</td><td><input type="radio"/></td><td><input checked="" type="radio"/></td><td><input type="radio"/></td></tr><tr><td>Also receiving a benzodiazepine (e.g., diazepam, lorazepam)</td><td><input type="radio"/></td><td><input checked="" type="radio"/></td><td><input type="radio"/></td></tr><tr><td>Elderly patients</td><td><input type="radio"/></td><td><input checked="" type="radio"/></td><td><input type="radio"/></td></tr></tbody></table>		Higher	Lower	Same	Obesity	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	COPD	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Obstructive sleep apnea	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Also receiving a benzodiazepine (e.g., diazepam, lorazepam)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Elderly patients	<input type="radio"/>	<input checked="" type="radio"/>
	Higher	Lower	Same																					
Obesity	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>																					
COPD	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>																					
Obstructive sleep apnea	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>																					
Also receiving a benzodiazepine (e.g., diazepam, lorazepam)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>																					
Elderly patients	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>																					
	<p>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?</p> <p><input checked="" type="radio"/> a) HYDROmorphine 0.5 mg subcutaneously q4h</p>																							

Category	Question
	<input checked="" type="radio"/> b) HYDROmorphone 1 mg subcutaneously q4h <input type="radio"/> c) HYDROmorphone 2 mg subcutaneously q4h <input type="radio"/> d) HYDROmorphone 4 mg subcutaneously q4h
Difference	1. In an equipotent dose, HYDROmorphone is more potent than morphine. <input type="radio"/> True <input checked="" type="radio"/> False <input type="radio"/> Unsure
	4. The difference between morphine and HYDROmorphone is: <input type="radio"/> a) Morphine is a brand name for HYDROmorphone <input type="radio"/> b) HYDROmorphone is a brand name for morphine <input type="radio"/> c) They are two completely different medications with different uses <input checked="" type="radio"/> d) Both are opioid medications used to treat pain but are dosed differently <input type="radio"/> e) HYDROmorphone is “watered-down” morphine
	5. When considering the difference between HYDROmorphone and morphine, which of the following ratios is MOST appropriate? <input type="radio"/> a) HYDROmorphone 1 mg ≈ morphine 1 mg (i.e., they are the same) <input type="radio"/> b) HYDROmorphone 1 mg ≈ morphine 2 mg (i.e., HYDROmorphone is stronger) <input checked="" type="radio"/> c) HYDROmorphone 1 mg ≈ morphine 5 mg (i.e., HYDROmorphone is stronger) <input type="radio"/> d) HYDROmorphone 2 mg ≈ morphine 1 mg (i.e., morphine is stronger) <input type="radio"/> e) HYDROmorphone 5 mg ≈ morphine 1 mg (i.e., morphine is stronger)
Calculations	14. A pediatric patient has been ordered 400 mcg of HYDROmorphone IV and you have 1 mL vials of HYDROmorphone 2 mg/mL available to you. What volume of HYDROmorphone 2 mg/mL contains the appropriate dose? <input type="radio"/> a) 200 mL <input type="radio"/> b) 20 mL <input type="radio"/> c) 2 mL <input checked="" type="radio"/> d) 0.2 mL <input type="radio"/> e) 0.02 mL

## Appendix VII: HYDROmorphone Discovering What We Don't Know – Webinar Slides – English

Advancing Safe Medication Practices 

### HYDROmorphone: Discovering What We Don't Know

Linda Poloway BScPharm, FCSHP,  
Consultant to ISMP Canada  
Lori Taylor RN, BScN, MN (c),  
Student, ISMP Canada  
Ian Trimble BScPhm, ACPR, PharmD (c),  
Student, ISMP Canada

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### About ISMP Canada

ISMP Canada is an independent not-for-profit organization dedicated to reducing preventable harm from medications.

Our aim is to heighten awareness of system vulnerabilities and facilitate system improvements.

[www.ismp-canada.org](http://www.ismp-canada.org)

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### Canadian Medication Incident Reporting and Prevention System (CMIRPS)


ISMP Canada is a key partner in CMIRPS with Health Canada and the Canadian Institute for Health Information (CIHI), with support from the Canadian Patient Safety Institute (CPSI)

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### Canadian Medication Incident Reporting and Prevention System (CMIRPS)

**Goals of CMIRPS:**

- Collect data on medication incidents;
- Facilitate the implementation of reporting of medication incidents;
- Facilitate the development and dissemination of timely, targeted information designed to reduce the risk of medication incidents (e.g. **ISMP Canada Safety Bulletins**); and
- Facilitate the development and dissemination of information on best practices in safe medication use systems.

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### We Encourage You to Report Medication Incidents



**Practitioner Reporting**  
<https://www.ismp-canada.org/en/report.htm>



**Consumer Reporting**  
[www.safemedicationuse.ca/](http://www.safemedicationuse.ca/)

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**SafeMedicationUse.ca** Help Prevent Harmful Medication Incidents Contact Us / Français

A component of the Canadian Medication Incident Reporting and Prevention System (CMIRPS)

Home | Report an Incident | Alerts | Newsletter | Safety Tools and Resources | About Us

Preventing harm from medication incidents is a responsibility of health professionals. Consumers like you can also play a vital role.

**Reporting Medication Incidents: beneficial Canadians.**

**REPORT NOW**

- About SafeMedicationUse.ca
- About Medication Incidents
- Why Report?
- Resolving Concerns About the Safety of Your Care
- Frequently Asked Questions (FAQs)
- Your privacy

**Tell Us How We're Doing**

**TAKE THE SURVEY**

**Latest News and Resources**

- Similar Patient Names Leads to Pregnant Woman Getting Wrong Prescription
- Safe Practices for Medication Use (Take Charge of Your Medicines)
- "Take as Directed: Your Prescription for Safe Health Care in Canada" is now available in Canadian bookstores!
- "The authors provide helpful information that can guide Canadians on how to manage their health care, including safe medication use" says Sylvia Hyland, Vice President and Chief Operating Officer of ISMP Canada.
- Health Canada is reminding Canadians about using acetaminophen safely.
- Read Health Canada's Information Update on Acetaminophen
- Read the Substantiated article "Spotlight on Acetaminophen"
- Access Drug Samples Unlawfully Provided as Birth Control - Newsletter - PDF
- Working with Consumers and Patients to Prevent Medication Incidents: Early Learning from ISMP Canada's Consumer Reporting and Learning Program, [www.safemedicationuse.ca](http://www.safemedicationuse.ca) - Webinar - February 23, 2011
- EpiPen® Auto-Injectors - Know How to Use EpiPen and Twinject Properly

## Learning Objectives

At the conclusion of this webinar, participants will be able to:

- Describe the types of HYDROmorphine related incidents reported to ISMP Canada
- Recognize some of the contributing factors to errors involving HYDROmorphine
- Understand the purpose of the ISMP Canada HYDROmorphine project
- Participate in the knowledge assessment survey



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## Background

- As of June 2011, 160 incident reports involving HYDROmorphine with an associated outcome of harm or death had been received by ISMP Canada
- HYDROmorphine is one of the top three medications associated with harm in the ISMP Canada incident database



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**Which of the following best describes the use of HYDROmorphine at your practice site?**

- a) Rarely used
- b) Used less frequently than morphine
- c) Used about the same frequency as morphine
- d) Used more frequently than morphine
- e) It has almost completely replaced morphine



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## HYDROmorphine: What Do We Know?

- A potent centrally acting analgesic drug of the opioid class
- A semi-synthetic derivative of morphine
- Indications:
  - relief of moderate to severe pain
  - post-operative relief of pain



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## How Does HYDROmorphine Compare to Other Opioids in Our Toolbox?



- More potent than most other opioids on a mg/mg basis
- Conversion ratios vary
  - In the literature
  - In institutional equianalgesic tables
- Requires patient specific consideration



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## Does your institution have an equianalgesic table?

- a) Yes
- b) No



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### HYDROmorphine Incidents: Contributing Factors

- Similarity to morphine in name
- Available dosage strengths do not reflect usual parenteral starting doses
- Similar concentrations of parenteral HYDROmorphine and morphine manufactured



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### ISMP Canada Initiatives to Date

- Application made to the United States Adopted Name (USAN) Council to change the generic name of HYDROmorphine
- Recommended use of TALLman lettering (e.g., HYDROmorphine) to enhance differentiation from morphine



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### ISMP Canada Initiatives to Date

- Encouraged use of independent double checks for high-alert medications, including HYDROmorphine and other opioids
- Involved in the development of an Accreditation Canada Required Organizational Practice (ROP) to limit the availability of opioid products and remove high potency concentrations from patient care areas



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### ISMP Canada HYDROmorphine Knowledge Assessment Project

The purpose:

- to better understand the significance of knowledge deficit among healthcare professionals as a factor contributing to medication incidents involving HYDROmorphine



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### Project Objectives

- Conduct an assessment of knowledge related HYDROmorphine
- Establish the magnitude of knowledge deficit
- Develop recommendations and interventions to address identified knowledge deficits



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### Survey Development

- A knowledge assessment survey was developed by ISMP Canada
- Some questions incorporated/ adapted from other surveys
  - Sydney Local Health Network (Australia)
  - ISMP (US)
- Reviewed by expert panel including anesthesiologist, pharmacists, nurse practitioner in acute pain management and clinical nurse specialist in palliative care
- Field tested by Saskatoon Health Region



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## The Survey

- Available online through SurveyMonkey™
- Open from Thursday, February 9<sup>th</sup> until Friday, March 2<sup>nd</sup>
- Should take 5 to 10 minutes to complete



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## The Nuts and Bolts

- How can you help?
  - Complete the survey yourself
  - Distribute the survey within your practice site to any healthcare providers who prescribe, dispense, or administer medications (e.g., physicians, pharmacists and pharmacy technicians, nurses, students)



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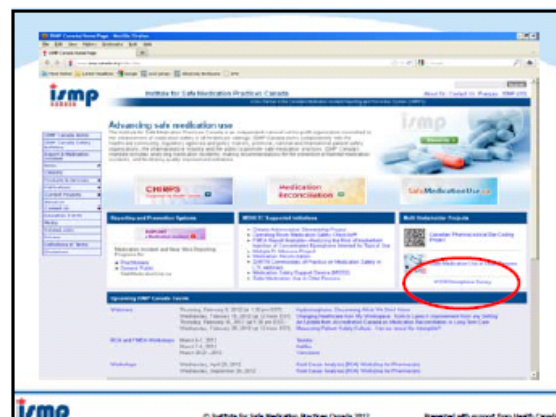
## Further Survey Information

- Information and link to survey can be found on the ISMP Canada website ([www.ismp-canada.org](http://www.ismp-canada.org))
- Email "web-blast" from ISMP Canada
- For further information contact [hydromorphone@ismp-canada.org](mailto:hydromorphone@ismp-canada.org)



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## Sharing Project Results

- Answers will be posted on the ISMP Canada website after the survey has closed
- Findings will be used to identify areas of knowledge deficit and to make recommendations to address them
- Recommendations and findings will be shared (e.g., *ISMP Canada Safety Bulletin*)



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## Acknowledgements

ISMP Canada would like to acknowledge the following individuals and organizations for their help in developing the survey:

### Expert reviewers:

- Jocelyn Brown, CNS
- Paul Filiatrault, RPh
- Alex Ho, MD
- Sandra Knowles, RPh
- Salima Ladak, NP
- Patti Madorin, RPh

### Information and support:

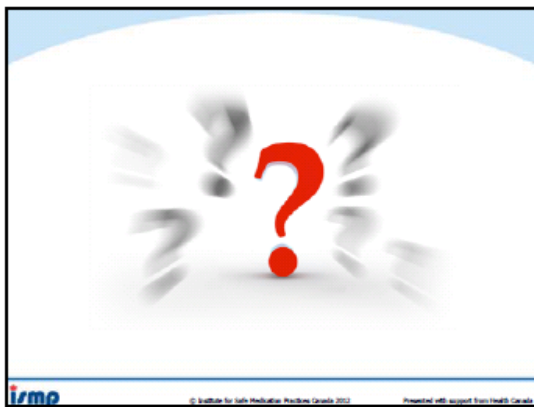
- Daniel Lalor, Clinical Excellence Commission, NSW, Australia
- Matt Fricker, ISMP (US)
- Saskatoon Health Region
- University Health Network
- ISMP Canada Staff

Funding support from Health Canada is gratefully acknowledged



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- For further information contact [hydromorphone@ismp-canada.org](mailto:hydromorphone@ismp-canada.org)

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### Upcoming Education Events for 2012

**Webinars**

- In 37 Minutes, 2012 (11:00-11:37) Hydromorphone: (Documente ce divert ou ne sert pas grand-chose) – communiqué par une femme de Santé Canada
- Webinar 15 (in 12 minutes) Changing Healthcare from My Workplace: Tools to Launch Improvement from any Setting
- Webinar 29 (in 12 minutes) Measuring Patient Safety Culture – Can we reveal the intangible?

**Workshops**

- March 6 and 7 (8 am – 4 pm) RCA and IMRA: Banff ON
- March 7 and 8 (8 am – 4 pm) RCA and IMRA: Halifax NS
- March 20 and 21 (8 am – 4 pm) RCA and IMRA: Vancouver BC
- April 15 (8:30 am – 4 pm) RCA Workshop for Pharmacists: Toronto ON
- September 24 (8:30 am – 4 pm) RCA Workshop for Pharmacists: Toronto ON

**More Information:**  
<http://www.ismp-canada.org/index.htm>  
 ISMP Canada A Key Partner in the Canadian Medication Incident Reporting and Prevention System (CMIRPS)

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### ISMP Canada Contacts


- Webinars: [webinars@ismp-canada.org](mailto:webinars@ismp-canada.org)
- Workshops: [education@ismp-canada.org](mailto:education@ismp-canada.org)
- Consultations: [consults@ismp-canada.org](mailto:consults@ismp-canada.org)
- CMIRPS: [www.ismp-canada.org/cmirms.htm](http://www.ismp-canada.org/cmirms.htm)
- Medication Safety Self-Assessments: [mssa@ismp-canada.org](mailto:mssa@ismp-canada.org)
- OR Checklist: [OperatingRoomChecklist@ismp-canada.org](mailto:OperatingRoomChecklist@ismp-canada.org)
- Questions: [info@ismp-canada.org](mailto:info@ismp-canada.org)

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## Appendix VIII: HYDROmorphone: Découvrir ce dont on ne sait pas – diapositives du webinaire - en français

Advancing Safe Medication Practices 

### HYDROmorphone: Découvrir ce dont on ne sait pas

Présentée par Lynn Riley, Inf.

Préparée par:  
Linda Poloway, BScPharm, FCSHP,  
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Lori Taylor, Inf, BScN, MN (C),  
étudiante, ISMP Canada  
Ian Trimble, BScPhm, ACPR, PharmD (C), étudiant, ISMP Canada

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**ISMP Canada**


L'Institut pour l'utilisation sécuritaire des médicaments du Canada (ISMP Canada) est un organisme indépendant sans but lucratif dédié à réduire les préjudices évitables liés à la médication.

Notre objectif est de créer des **systèmes** fiables et sécuritaires pour gérer les médicaments dans une multitude d'environnements

[www.ismp-canada.org](http://www.ismp-canada.org)

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**Le système canadien de déclaration et de prévention des incidents médicamenteux**

  
CMIRPS  
Supported by Health Canada

**Objectifs:**

- Faciliter la déclaration des accidents liés à la médication;
- Effectuer la collecte de données sur les accidents liés à la médication;
- Faciliter l'élaboration et la diffusion d'une information ciblée visant à réduire le risque d'un accident lié à la médication (p.ex., Les bulletins de l'ISMP Canada); et
- Faciliter l'élaboration et la diffusion des meilleures pratiques quant aux systèmes d'utilisation sécuritaire des médicaments.

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**SafeMedicationUse.ca**  
SUPPORTED BY HEALTH CANADA

Help Prevent Harmful Medication Incidents

A commitment to the Canadian Medication Incident Reporting and Prevention System (CMIRPS)

Home | Report an Incident | Alerts | Newsletter | Safety Tools and Resources | About Us

Preventing harm from medication incidents is a responsibility of health professionals. Consumers like you can also play a role.

Reporting Medication Incidents Identical Conditions

**REPORT NOW**

- About SafeMedicationUse.ca
- About Medication Incidents
- Why Report?
- Reporting Concerns About the Safety of Your Care
- Frequently Asked Questions (FAQs)
- Your privacy

Tell Us How We're Doing

**TAKE THE SURVEY**

**Latest News and Resources**


- Similar Patient Names Leads to Pregnant Woman Getting Wrong Prescription
- Safe Practices for Medication Use (Take Charge of Your Medication)
- "Take as Directed": Your Prescription for Safe Health Care in Canada is now available in Canadian Societies!
- "The editors provide helpful information that can guide Canadians on how to manage their health care, including safe medication use" says Sylvia Hyland, Vice-President and Chief Operating Officer of ISMP Canada.
- Health Canada is reminding Canadians about using isoprenaline safely.
- Read Health Canada's Information Update on Acetaminophen
- Read the SafeMedicationUse article "Spotlight on Acetaminophen"
- Angry Drug Samples Unusually Provided as Birth Control: Newsletter - PCP
- Working with Consumers and Patients to Prevent Medication Incidents: Early Learning from ISMP Canada's Consumer Reporting and Learning Program, [www.SafeMedicationUse.ca](http://www.SafeMedicationUse.ca) - Webinar - February 23, 2011
- Essential Drug Substitutes - Know How to Use Fillers and Thickeners Properly

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**Objectifs d'apprentissage**


A la fin de ce webinaire, les participants seront en mesure de:

- Décrire les types d'accidents liés à l'HYDROmorphone, rapporté à l'ISMP Canada
- Reconnaître quelques-uns des facteurs qui contribuent aux défaillances impliquant l'HYDROmorphone
- Comprendre le but du projet de l'ISMP Canada sur l'HYDROmorphone
- Participez au sondage d'évaluation sur la connaissance de l'HYDROmorphone

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**Contexte**

- Depuis juin 2011, 160 rapports d'accidents impliquant l'HYDROmorphone avec comme résultat un préjudice ou un décès ont été déclarés à l'ISMP Canada
- Dans la base de données des accidents de l'ISMP Canada l'HYDROmorphone fait partie des trois principaux médicaments associés à des préjudices

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**Dans votre milieu de pratique, à quelle fréquence est-ce que vous prescrivez/ distribuez et administrez l'HYDROmorphone?**

- a) peu fréquemment
- b) moins fréquemment que la morphine
- c) à la même fréquence que la morphine
- d) plus fréquemment que la morphine
- e) cela a complètement remplacé la morphine

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## L'HYDROmorphone: Que savons-nous?

- Un médicament analgésique puissant, qui agit centralement, dans la classe des opiacés
- Un dérivé semi-synthétique de la morphine
- Indications:
  - soulagement de la douleur modérée à grave
  - soulagement de la douleur post-opératoire

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## Comment fonctionne l'HYDROmorphone par rapport à d'autres opiacés?

- Plus puissant que la plupart des autres opiacés dans le cadre de mg à mg
- Taux de conversion variable
  - Dans la littérature
  - Selon les tableaux équianalgésiques organisationnels
  - Nécessite une attention particulière pour chaque patient

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## Est-ce que votre établissement a une table équianalgésique?

- a) oui
- b) non



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## Quel ratio *hydromorphone: morphine* utilisez-vous?

- a) 1:4
- b) 1:5
- c) 1:7
- d) 1:9
- e) Un autre



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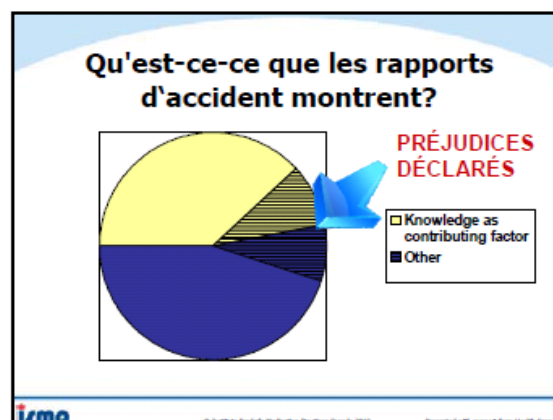
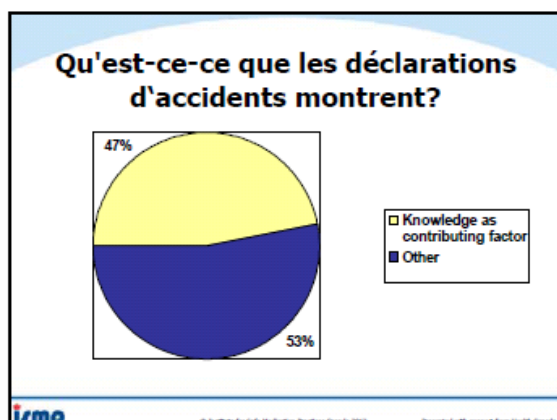
## Qu'est-ce-ce que les déclarations d'accidents indiquent?

- 5% des accidents déclarés impliquant l'HYDROmorphone
  - Comprend les résultats de la base de données de l'ISMP Canada (Analyse-ERR) et de l'Institut canadien d'information sur la santé (Système national de rapport d'erreurs)
  - Des préjudices ont été déclarés dans 17% de ces accidents

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### Quelles sont les erreurs les plus fréquentes?

- La dose administrée est incorrecte
- Une forme à libération immédiate est administrée plutôt qu'une forme à libération contrôlée (ou vice versa)
- L'HYDROmorphine est administrée lorsque la morphine est prescrite (ou vice versa)
- L'HYDROmorphine est n'est pas administrée selon la bonne voie d'administration
  - sous-cutanée au lieu d'orale
  - voie intraveineuse au lieu d'orale

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### Quelles sont les erreurs les plus courantes chez vous?

- Une libération immédiate est administrée lorsqu'une libération contrôlée est prévue (ou vice versa)
- L'HYDROmorphine est administrée lorsque la morphine est prescrite (ou vice versa)
- La dose administrée est incorrecte
- HYDROmorphine n'est pas administrée selon la bonne voie d'administration
- Un autre erreur n'est pas décrite ci-dessus

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### Les facteurs contributifs aux accidents d'HYDROmorphine:

- Le nom est semblable à la morphine
- Les doses disponibles ne reflètent pas les doses initiales habituelles parentérales
- Des concentrations similaires d'HYDROmorphine parentérale et de la morphine sont fabriquées

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### Initiatives de l'ISMP Canada, à date

- Une demande a été faite au Conseil de Nom Adopté des États-Unis (USAN) Conseil pour changer le nom générique de l'HYDROmorphine
- Recommandation de l'utilisation du lettrage majuscule (par exemple, l'HYDROmorphine) pour différencier de la morphine

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## Initiatives de l'ISMP Canada, à date

- Encourager l'utilisation de la double vérification indépendante pour les médicaments de niveau d'alerte élevé, y compris l'HYDROMORPHONE et d'autres opiacés
- Implication dans l'élaboration des Pratiques organisationnelles requises (POR) d'Agrément Canada pour limiter la disponibilité des opiacés et d'éliminer les concentrations élevées dans les unités de soins



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## Projet de l'ISMP Canada pour évaluer la connaissance de l'HYDROMORPHONE

Le but:

- afin de mieux comprendre l'importance du déficit de connaissances des professionnels de la santé comme étant un facteur contributif aux accidents impliquant l'HYDROMORPHONE



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## Objectifs du projet

- Effectuer une évaluation reliée aux connaissances de l'hydromorphone
- Établir la portée du déficit de connaissances
- Élaborer des recommandations et des interventions visant à combler les déficits de connaissances identifiés



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## Conception du sondage

- Un sondage d'évaluation des connaissances a été élaboré par l'ISMP Canada
- Certaines questions sont incorporées / adaptées à partir d'autres sondages
  - Sydney Local Health Network (Australia)
  - ISMP (US)
- Révisé par un groupe d'experts, y compris un anesthésiste, des pharmaciens, infirmiers(ères) praticiens(ennes) dans la gestion de la douleur aiguë et une infirmière clinicienne spécialisée en soins palliatifs
- Testé sous des conditions réelles dans la région de Saskatoon



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## Le sondage

- Disponible en ligne par SurveyMonkey™
- Ouvert à partir d'aujourd'hui jusqu'au vendredi, 2 mars
- Devrait prendre de 5 à 10 minutes à compléter



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## Les détails

- Comment pouvez-vous aider?
  - Complétez le sondage
  - Distribuer le sondage au sein de votre lieu de pratique à tous les professionnels de la santé qui prescrivent, distribuent, ou administrent des médicaments (par exemple, les médecins, les pharmaciens et les assistants techniques en pharmacie, infirmières, étudiants)



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## Renseignements additionnels

- Le lien au sondage est disponible sur le site Web de l'ISMP Canada
- ([www.ismp-canada.org](http://www.ismp-canada.org))
- Courriel à grande diffusion de l'ISMP Canada
- Pour plus d'informations contactez [hydromorphone@ismp-canada.org](mailto:hydromorphone@ismp-canada.org)



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## Partage des résultats du projet

- Les réponses seront affichées sur le site de l'ISMP Canada lorsque le sondage sera fermé
- Les résultats seront utilisés pour identifier les zones de déficit de connaissances et de formuler des recommandations pour y remédier
- Les recommandations et les conclusions seront partagées
- (p.ex., *bulletins de l'ISMP Canada*)



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## Remerciements

L'ISMP Canada tient à remercier les personnes et organisations suivantes pour leur aide dans le développement du sondage:

### Conseillers experts :

- Jocelyn Brown, CNS
- Paul Filiatrault, RPh
- Alex Ho, MD
- Sandra Knowles, RPh
- Salima Ladak, NP
- Patti Madorin, RPh

### Information et appui:

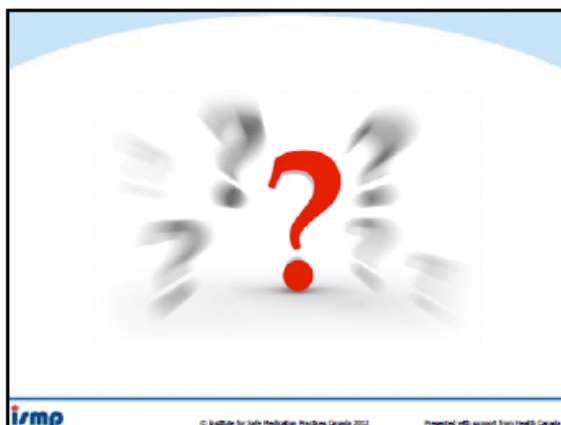
- Daniel Lalor, Clinical Excellence Commission, NSW, Australia
- Matt Fricker, ISMP (US)
- Saskatoon Health Region
- University Health Network
- Le personnel de l'ISMP Canada

Avec le soutien financier de Santé Canada



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