Hydromorphone – Are We Doing It Right? A Drug Use Evaluation of Hydromorphone for Hospital Inpatients

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Background

Hydromorphone is a potent, centrally-acting opioid analgesic that is used to treat moderate to severe, acute or chronic pain.[1] Hydromorphone is approximately five to seven times more potent than morphine. Due to its potency, errors associated with hydromorphone use may result in serious harms to patients, including death.[1,2]

Many national and international institutions focusing on medication safety, such as NSW Clinical Excellence Commission and The Institute for Safe Medication Practices Canada, have recognised this danger and classified hydromorphone as a high-risk medication. Additionally, practice alerts, policies and recommendations have been put forward to minimise errors with hydromorphone use.[3,4,5]

Aim

To evaluate the prevalence and patterns of hydromorphone use in a 1,000-bed tertiary hospital in Sydney, and develop a standard procedural protocol to guide the safe use of this medicine.

Methods

A retrospective drug use evaluation of hydromorphone was conducted across all inpatient units at Westmead Hospital over a two-week period in May 2017. Patients prescribed hydromorphone over this period were identified from Schedule 8 ward register entries and included in the audit.

Data including patient demographics, prior opioid use, hydromorphone formulation and dose, indication and specialty of initiating prescriber were collected from electronic medical record and paper-based medication charts. Information gathered were tabulated in a pre-specified audit tool.

The primary focus of the study was to understand the prescribing practice surrounding hydromorphone commencement, while an assessment of treatment plan and documentation for new hydromorphone orders was performed as a sub-analysis activity.

The findings of the audit were then fed back to the Hydromorphone Guideline Working Group and used for the development of a district-wide multidisciplinary hydromorphone guideline.

Results

A total of 964 hospital inpatients reviewed and approximately 9% (n=85) of these patients received hydromorphone during the study period. Of those receiving hydromorphone, 85% (n=72) were initiated during inpatient stay while 72% (n=52) of those commencing on hydromorphone were previously opioid-naïve (Figure 1).

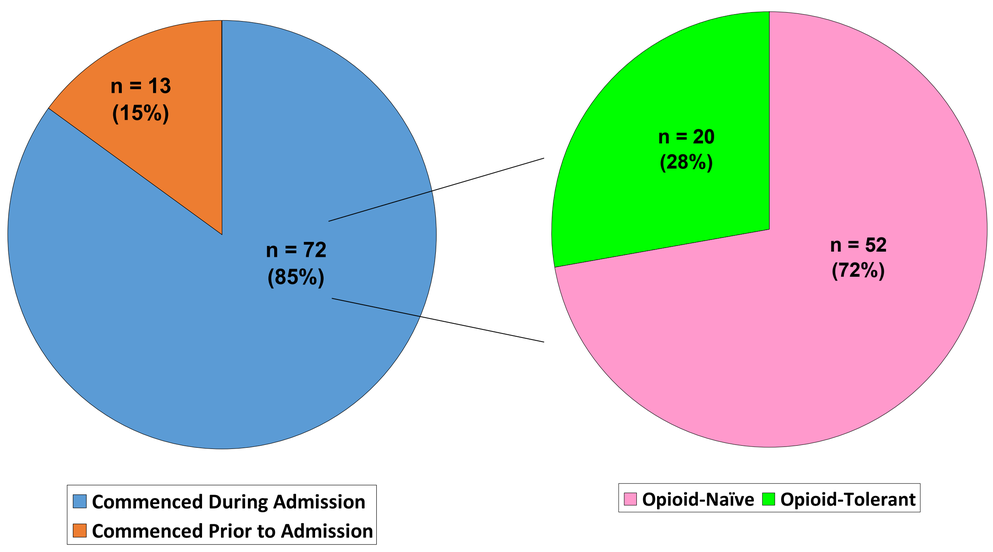

Figure 1a. Timing of Hydromorphone Initiation in Relation to Hospital Admission

Figure 1b. History of Opioid Use in Patients Commenced on Hydromorphone During Hospital Admission

For those patients commenced on hydromorphone, the most common indications for therapy were palliative care, pain in presence of renal impairment and acute musculoskeletal or visceral pain. (Table 1).

Indication	Number of Patients	Percentage
Palliative care	33	45.8%
Pain in presence of renal impairment	17	23.6%
Acute musculoskeletal or visceral pain	7	9.7%
Chronic pain uncontrolled with other opioids	6	8.3%
Post-operative analgesia	5	6.9%
Acute cancer pain	3	4.3%
Pain in presence of intolerance to other opioids	1	1.4%

Table 1. Indication for Hydromorphone Commencement

Palliative Care and Geriatric Medicine were the two most frequent specialties that initiated hydromorphone therapy, collectively providing care to 53% of studied patients (Figure 2). Closer analysis showed that hydromorphone use by these specialties was almost entirely for palliative purposes.

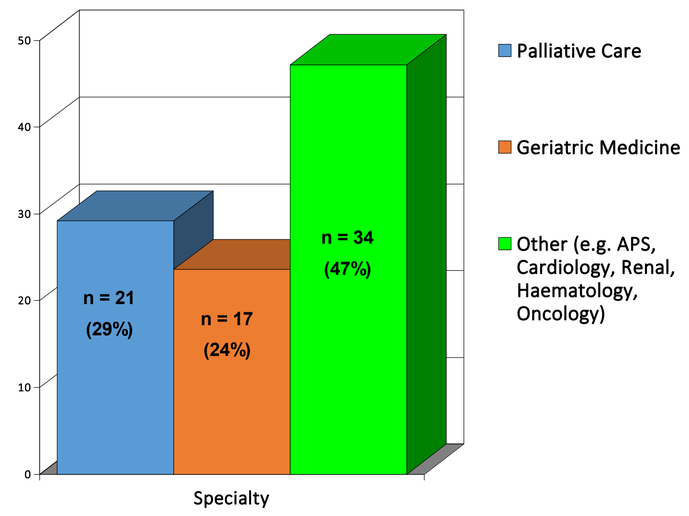

Figure 2. Specialty Initiating Hydromorphone Therapy

Sub-analysis of treatment plan and documentation for new hydromorphone orders showed that almost 1 in every 5 hydromorphone prescriptions was not accompanied with a management plan (Table 2). Additionally, if the treatment plan was known, it was not clearly documented in 1 in every 3 patients.

Treatment Plan	Number of Patients	Percentage
Palliation	30	41.7%
Short-term use (cessation prior to discharge)	17	23.6%
Long-term use (with GP or chronic pain follow-up)	7	9.7%
Short-term use (with GP weaning plan)	4	5.6%
Undocumented	14	19.4%

Table 2. Treatment Plan for Hydromorphone Therapy

Discussion

While use of hydromorphone across the entire hospital was low, given its potency, the relatively high proportion of opioid-naïve patients that received hydromorphone was of concern.

A multidisciplinary district-wide hydromorphone guideline was developed as an action plan following this audit, and the main data findings were utilised to help direct panel discussion, such as:

- Inclusion of Geriatric Medicine in the primary document stakeholders
- Expansion of existing hydromorphone use restriction to include initiation by Renal Medicine and Geriatric Medicine consultants within the scope specified in the guideline
- Creation of hydromorphone dosing recommendation for specific patient populations (e.g. elderly, renally-impaired patients, palliative patients)
- Safety alert requirement to state indication and clear plan for therapy

Conclusion

This drug use evaluation was able to identify the patterns of hydromorphone prescribing at the institution, and the results provided clinicians with informed recommendations in developing a guideline to safeguard the use of this medicine. Educational campaigns to enhance guideline implementation are warranted and a repeat analysis to assess practice change following these safety measures should also be performed.

References:
1. New South Wales Health. Hydromorphone: high-risk medicine. Safety Alert. 2017:001.
2. Institute for Safe Medication Practices Canada. Shared learning – reported incidents involving hydromorphone. ISMP Canada Safety Bulletin. 2006;6(9):1-3.
3. New South Wales Health. High-risk medicines management policy. NSW Health. 2015.
4. Clinical Excellence Commission. High-risk medicines management: hydromorphone policy standard checklist. Clinical Excellence Commission. 2017.
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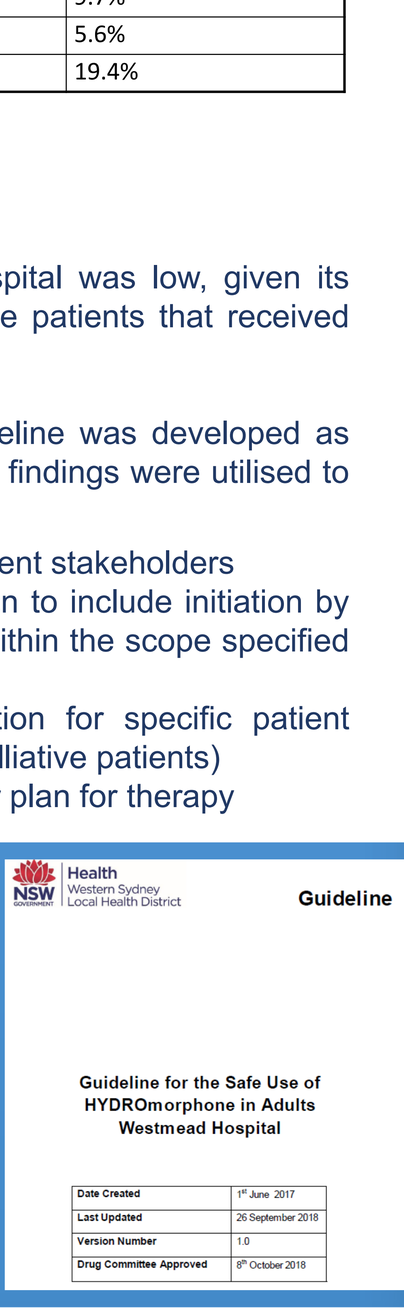
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Guideline

Guideline for the Safe Use of HYDROmorphone in Adults Westmead Hospital

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