Safety Information 007/21

Safe use of medications with multiple concentrations in Electronic Medication Management (EMM) systems

9 July 2021

Distributed to:

- Chief Executives
- Directors of Clinical Governance
- Chief Information Officers
- Chief Clinical Information Officers

We recommend you also inform:

- Drug and Therapeutics Committees
- Directors of Medical Services
- Directors of Pharmacy
- Directors of Nursing and Midwifery
- Nurse/Midwifery Unit Managers
- eMeds Teams

Expert Reference Group

Content reviewed by:

- eHealth NSW Clinical Engagement and Patient Safety Team
- Medication Safety Expert Advisory Committee

Clinical Excellence Commission

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Review date

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Background

Clinicians are reminded of the need to carefully monitor calculations in the Cerner eMeds system when administering all medications. This attention to detail ensures patient safety. Recently, we were alerted to an instance where the volume calculated by the eMeds system that displayed in the administration window, did not match the volume manually calculated by the administering clinicians. The system automatically assigned a concentration of HYDROmorphone injection to the order that differed to the concentration of HYDROmorphone injection on hand. This manual calculation by clinicians prevented a dosing error. If the volume calculated by the system had been administered, it would have resulted in a 5-fold overdose for the patient.

Impact on other medications

Whilst the instance involved HYDROmorphone, the issue is not unique to this medication. Any **injectable** or **oral liquid** medication that has multiple concentrations available is potentially affected. Examples include (this list is **not** exhaustive): digoxin injection, furosemide injection, ketOROLAC injection, morphine injection, morphine oral liquid and oxycodone injection.

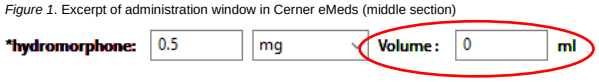
Considerations for clinicians in LHDs/SHNs

- Administering clinicians are reminded to independently calculate the required volume of medication considering the prescription and what is available in the clinical area.
- Second person checks should be undertaken for all relevant medication orders as outlined in the *Medication Handling in NSW Public Health Facilities* Policy Directive (PD2013_043). The independent second check includes (but is not limited to) confirming; the selection of the correct medication, that the dose is appropriate, and the calculations are correct.

Considerations for technical groups in LHDs/SHNs

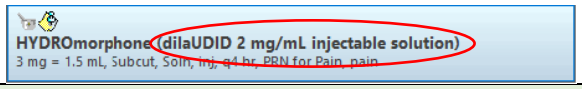
- In consultation with your local Drug and Therapeutics Committee, consider appropriateness of mitigation strategies currently in place to prevent any potential errors involving medications available in multiple concentrations occurring.
- Strategies may differ based on local configurations and EMM system in use. The following are examples of two possible mitigation strategies that have been used in different LHDs/SHNs (both use the Cerner eMeds system) –
  - Removal of 'automatic product assignment' (APA) in Cerner eMeds for affected products. This results in the volume required to prepare the dose appearing as "0 mL" in the administration window prompting manual calculation (see Figure 1). A system generated volume will only appear when a pharmacist manually assigns an appropriate product to the medication order during the order verification process.

Figure 1. Excerpt of administration window in Cerner eMeds (middle section)



  - Displaying the concentration of the prescribed product in the administration window (see Figure 2). This is achieved through configuring the order catalog with M- and N- type synonyms in the Cerner eMeds system. This enables administering clinicians to check the product selected for use against the product assigned to the order (and used by the system in the volume calculation).

Figure 2. Excerpt of administration window in Cerner eMeds (top section)



Suggested actions by Local Health Districts/Networks

1. Distribute this Safety Information to relevant clinicians, groups and committees for action, if appropriate.
2. Drug and Therapeutics Committees should consider safety implications and mitigation strategies required for medications available in multiple concentrations within EMMs. This should be in consultation with the local eMeds and/or ICT teams. Attention should be given when new concentrations are introduced, for example:
   a. during supply disruptions where a different concentration of a medication needs to be used (e.g. switching between ketOROLAC 10 mg/mL and 30 mg/mL injection products),
   b. when injectable or oral liquid medications are added to the formulary (new medications as well as alternate concentrations of existing medications).
3. Ensure a system is in place to document actions taken.