

HEALTH INNOVATION SERIES

Evidence based recommendations to improve care delivery and outcomes



Dose calculator: Missing in action!

Dose calculators are an important part of computerised decision support built into electronic medication systems to automate the calculation of a medication dose. Some systems, however, unintentionally omit applying the dose calculator to less common units such as mL/kg. Without the use of a dose calculator, errors can occur, particularly in paediatrics where medications are prescribed and administered according to body weight.

The ‘missing dose calculator’ scenario can occur because electronic medication systems are



programmed to only trigger the dose calculator for specific units of medication e.g., mg/kg, microgram/kg or mg/m². In some systems, the automatic trigger may not be applied to less commonly used units such as mL/kg. Example 1 below, shows two orders where the dose calculator was not triggered because the prescriber used mL/kg. As a result, neither of the medication orders have a final total dose to be administered. Example 2 shows the same orders, when the dose calculator has been triggered, allowing the total dose to be displayed.


Example 1: Two orders with no total dose calculated, as ‘mL/kg’ did not trigger the dose calculator

Medications	26/05/2022 14:14	26/05/2022 20:00
Scheduled		
 lactulose 1 mL/kg, Oral, BD, DIOS lactulose		1 mL/kg
PRN		
 PRN adrenaline (epinephrine) (adrenaline (epinephrine) 1 mg/mL (1:1000) ... 0.01 mL/kg, Intramuscular, ONCE, PRN anaphylaxis, anaphylaxis, Administer in thigh May be repeated every 5 minutes until there is clinical improvement adrenaline (epinephrine)	0.01 mL/kg	




Example 2: Two orders where the use of the dose calculator resulted in the total dose displayed

Medications	26/05/2022 14:14	26/05/2022 20:00
Scheduled		
 lactulose 20 mL, Oral, BD, DIOS Target Dose: lactulose 1 mL/kg (Actual Dose: 1 mL/kg) 06/12/2022 07:06:... lactulose		20 mL
PRN		
 adrenaline (epinephrine) (adrenaline (epinephrine) 1 mg/mL (1:1000)... 0.2 mL, Intramuscular, ONCE, PRN anaphylaxis, anaphylaxis, Administer in thigh May be repeated every 5 minutes until there is clinical improvement Tar... adrenaline (epinephrine)	0.2 mL	




**SYSTEM OPTIMISATION
TIP #1**

Ensure all units requiring the dose calculator are added to the rule to trigger the dose calculator.



**SYSTEM OPTIMISATION
TIP #2**

Check the unit ‘mL/kg’ is included in the rule to trigger the dose calculator.



USER TIP #1

When prescribing, check that the total dose is displayed in the order.

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Disclaimer: These recommendations are based on issues identified during various programs of research undertaken by Macquarie University. They are not intended to be an exhaustive list and should be considered by individual care settings for appropriateness prior to implementation. A more detailed review of the issue and impact may also be warranted. The content of this document is intended for information purposes only.

