AUSTRALIAN COMMISSION
ON SAFETY AND QUALITY IN HEALTH CARE

FACT SHEET
for clinicians

Paediatric prescribing position statement

Children are more vulnerable to harm from medication errors. Small errors in prescribing can have significant consequences for children.

Stop, Think, Check!

Stop and review the appropriateness of the medicine for the child and the information required to prescribe safely

If the medicine is indicated, is the medicine appropriate for the child, noting any known allergies; is this the right formulation; and is the dose correct based on:

- **Age and/or date of birth**
- **Current and accurate body weight**.

Think about the prescription information for the pharmacist to dispense, nurse and others to administer, and patient to use

On the prescription, in addition to age and weight, include:

- **Indication** for the medicine
- **Allergy status**
- **Dose** in units of mass – for example, 150 mg per dose, given four times a day
- **Basis for the dose calculation** such as mg/kg (use a calculator)
- **Duration of treatment** with appropriate **quantity**.

Think about your patient and their carer's understanding

- Is this a new medicine and do they know why it is prescribed?
- Is it being used for an approved indication or 'off-label'?
- Is the formulation appropriate for age and administration route?
- Are they able to give the medicine, in the correct dose, measured accurately?
- Where appropriate, do they know what the delivery device looks like and how to administer correctly?
- Do they know the duration of treatment and how to dispose of medicines with limited shelf-life, for example antibiotic liquids?
- Do they know how to store the medicine, including keeping out of reach of children?
- Are there any monitoring requirements? Are there any side effects that should be monitored?

Check the dose is accurately described on the prescription with appropriate follow up

- **Verify** all dose calculations and the specified dose.
- Schedule a review of ongoing need of the medicine and a measurement of the child's weight.

10/2024

The Australian Commission on Safety and Quality in Health Care (the Commission) recommends that authorised prescribers clearly specify the following information on **all** prescriptions for children:

- **Age and/or date of birth**
- **Current and accurate body weight**
- **Indication** for the medicine
- **Allergy status** (both active ingredient and excipients)
- **Dose** in units of mass – for example, 150 mg per dose, given four times a day
- **Basis for the dose calculation** such as mg/kg, if appropriate
- **Duration of treatment and quantity** in line with a review of ongoing need and child's weight.

Documenting patient weight and age and adopting good prescribing practices can prevent patient harm associated with dosing errors.

All clinicians involved in prescribing, dispensing and administering medicines to children should review the above information and:

- **Check** the appropriateness of the medicine for the child, the prescribed dose and appropriateness of formulation
- **Check** for any known adverse reactions – for example, allergies to medicines and excipients
- **Discuss and clarify** with parents and carers the reason for the medicine's use, the correct dose and instructions for dose measurement and administration, the duration of treatment, storage requirements, when and how to dispose of any unused medicines safely and where to obtain a follow up supply for specialised medicines
- **Verify** all dose calculations (using a calculator) and the specified dose.

Dose

An accurate weight is essential to calculate the dose at the time of prescribing; and to verify the dose during dispensing and/or administration.

For children whose weight **significantly exceeds the ideal weight** for their age, prescribers should use the child's ideal weight (not actual weight) for dose calculations. It may be useful to **consider the average weight of a child of their age**, and their height to determine an appropriate dose.

Use a paediatric specific resource where possible. *The Australian Medicine Handbook Children Dosing Companion*[1] provides dosing advice for prescribing in children; and specifies when ideal weight should apply for some drug monographs. To calculate doses based on ideal weight, use the **average weights-for-age table** in the handbook.

For **ALL paediatric patients**, including those over 40 to 50 kg, ensure that the upper dose limits for adults are **not exceeded**.

Rounding of doses for ease of measurement (such as half a tablet or 2 mL of liquid) can be undertaken; with primary consideration of age and weight.

It may not be applicable to specify the dose in units of mass in certain circumstances, such as when prescribing eye drops, ear drops, topical products, inhalers, or insulin.

Electronic medication management has the capacity to improve medication error rates. However, paediatric dose errors continue to occur and processes to support safe electronic prescribing should be adopted. These include ensuring an accurate weight is recorded in the system; forcing functions are used to increase the frequency of updating the child's weight; and using independent double checks. Ensure in-built dose calculators are audited to avoid introducing medication errors.

Rationale

Medication errors are one of the most common and preventable adverse events in healthcare settings.[2] Children are more prone to medication errors and are more vulnerable to harm from the effect of medication errors than adults.[2,3,4] A worldwide systematic review has estimated 100 to 400 prescribing errors occur per 1,000 paediatric patients.[5] Dose calculation errors are one of the most common types of medication error in children.[1,3,6,7]

Scope

This position statement is applicable to all paediatric prescribing. However, these recommendations are **not exhaustive**. Use of up-to-date evidence-based paediatric reference texts and guidelines for more detailed information on optimising paediatric prescribing is especially important when dealing with special patient cohorts such as those with renal or hepatic impairment.

Supplementary notes

It is important to document the child's weight and the basis for dose calculation to support safe prescribing on all prescriptions for children.[1,8,9,10] Most dosing recommendations in paediatric reference materials are standardised by weight (mg/kg).[1,8] Weight and dose calculation are included as required fields on the national standard medication chart (NSMC) and in electronic prescribing systems. Although there is no specific field on outpatient or community prescriptions, it is still recommended to record weight and dose calculation.

In addition to accurate weight, the appropriateness of the prescribed medicine for use in children should also take into consideration:

- Dosing based on age
- Age restrictions within the licensed use of that medicine
- Formulation, for example, a liquid vs. solid formulation, avoiding less palatable medicines, using alternative routes of administration or a multi-dose inhaler vs. a dry powder inhaler with age limitations based on respiratory capacity
- Dose frequency, minimising where possible
- Route of administration, for example, using a rectal formulation for children who cannot tolerate oral medicines.

Neonates are a sub-population of 'paediatrics' who require additional specialist considerations. This includes the use of specialty reference sources to guide prescribing and medicines use appropriate for their unique needs.

Some clinical areas are not designated solely for children. Processes should be in place to support safe prescribing and medicines use in the paediatric population where and whenever children receive care. This includes higher risk settings where children are treated in areas not designated solely for paediatric care.[11]

Electronic medication management (EMM) has been associated with an increase in medication error rates, particularly relating to dose errors.[7] Processes to support safe prescribing include ensuring the most accurate weight recorded in the system is used and optimising default rounding rules in dose calculations.[12] Mixed adult and paediatric designed EMM systems should include features that support safe prescribing in paediatric patients.

Reference texts and resources

- **Australian Medicines Handbook Children's Dosing Companion**
- **Australian Pharmaceutical Formulary and Handbook**
- Society of Hospital Pharmacists of Australia **Don't Rush to Crush**
- **Therapeutic Guidelines**
- The Royal Children's Hospital **Paediatric Injectable Guidelines**
- **British National Formulary for Children**
- Australian Commission on Safety and Quality in Health Care **Recommendations for terminology, abbreviations and symbols used in medicines documentation**
- Agency for Healthcare Research and Quality (US) **Health literacy universal precautions toolkit, 3rd edition: use the teach-back method**

Consultation

This position statement is endorsed by the following organisations:

- Advanced Pharmacy Australia
- Australian College of Nurse Practitioners
- Australian Nursing and Midwifery Federation
- Pharmaceutical Society of Australia
- Royal Australasian College of Physicians
- Women's and Children's Healthcare Australasia.

Questions

For more information, please visit: **safetyandquality.gov.au/our-work/medication-safety**.

You can also contact the Medicines Safety and Quality Team at: **medsafety@safetyandquality.gov.au**.

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