

Paediatric Prescribing Pocket Guide
September 2014
 (Version 1)

In children, the risk of medication errors is often exacerbated by the need for calculations to determine the dose. Prescribing errors in children can lead to significant morbidity and mortality.

The aim of this pocket guide is to improve prescribing practice in paediatrics, thereby improving patient safety and reducing delays in patients receiving and benefiting from intended treatment.

This guidance applies to the writing of both outpatient and inpatient prescriptions in paediatrics.

For further advice contact:

Paediatric pharmacist:	bleep 620
Medicines information:	(1) 2761/ (1) 2762

There are legal requirements and General Medical Council (GMC) standards for prescription writing (http://www.gmc-uk.org/guidance/ethical_guidance/14316.asp).

Written by:	Philippa Anna Stilwell, Foundation Year Doctor (Paediatrics) (email: philippa.stilwell@nhs.net)
Checked by:	Lekha Shah, Lead Paediatric Pharmacist, Northwick Park
Supervised by:	Dr Wolfgang Müller, Consultant Paediatrician, Clinical Director Paediatrics NWLHT
Authorised by:	Drugs and Therapeutics Committee, September 2014
Review date:	September, 2017

Acknowledgements: London Deanery, Royal College of Paediatrics and Child Health,
<http://www.rcpch.ac.uk/training-examinations-professional-development/quality-training/paediatric-prescribing-tool/paediatr>

Top tips – general points

1. Use a black pen , write legibly (in capitals , except in the case of electronic prescriptions)
2. Complete patient's full name , date of birth , and hospital number (usually achieved by using patient printed label)
3. Complete Consultant's name (who is responsible for the care of the patient)
4. Complete ward or clinic name for outpatients (must be updated if patient is transferred to another ward)
5. Body weight (in kg) : measure on admission, complete and date (use measured weight rather than estimated, unless unable to weigh). If body weight not from current admission, add date
6. Complete height (needed if dosage is dependent on body surface area)
7. Complete allergy box – if patient has no known allergies, state ' no known drug allergies '. If the patient has an allergy, state the name of the drug and the nature of the allergy if known (state reaction 'unknown' if necessary). Sign (&PRINT NAME) and date the entry
8. Prescriber's details: signature (&PRINT NAME) for all prescriptions. Ensure all prescriptions are dated (date, signature and printed name are legal requirements). Include your contact details on all prescriptions, in case there is a query with the prescription (state your bleep number/extension number/number for your ward)
9. Always ask whether the child is already taking regular medication and if so, which and at what dose, form , and frequency and clearly prescribe and document by circling 'medicine on admission'
10. If an alteration is needed, cross out the prescription using a single straight line and sign (&PRINT) name and write the date . Then re-write a new prescription. To cancel a prescription, clearly draw a line through the whole prescription, sign (&PRINT) name and date . Always inform the nurse when a new drug has been prescribed to avoid missed or delayed doses
11. Use the current children's British National Formulary (BNFC) (online version more up to date than the paper version)
12. Check and use local prescribing guidelines (e.g. antibiotics, sedation) available via document store on the intranet under paediatrics
13. Prescribe sensible and practical doses of medicine which can be easily measured depending on the formulations available
14. Always check and confirm the patients' allergy status prior to prescribing any medication . In case of an allergy ensure an appropriate alternative is prescribed.

Medicines

1. Names of drugs:	<ul style="list-style-type: none"> - print the drug name clearly - it is usually best to use approved (generic) rather than brand names. However, some medicines require the brand name to be written e.g. Qvar/Clenil (Beclomethasone), insulins. - do not abbreviate any drug name - drugs can be written in the 'regular', 'when required' or 'variable prescriptions' box (usually used for steroids and sub-cutaneous insulin)
2. Dosage units:	<ul style="list-style-type: none"> - always use strength and actual doses e.g. g, mg, micrograms - use approved abbreviations for doses - use of 'g', 'mg', or 'mL' is allowed but spell out all other units in full, e.g. units, microgram, nanograms. It is VITAL to differentiate between micrograms and mg - doses < 1g should be prescribed in mg e.g. 0.5g is best written as 500mg - doses < 1mg should be prescribed in micrograms e.g. 0.5mg is best written as 500 micrograms - doses < 1mcg should be prescribed in nanograms e.g. 0.5 mcg is best written as 500 nanograms - do not prescribe liquids in mL unless indicated in BNF (e.g. some vitamins may be prescribed by volume). This is because different liquids come as different concentrations (e.g. paracetamol can be 120mg/5mL or 250mg/5mL) so there is a high risk of drug error. It is more appropriate to prescribe in actual dose (e.g. mg) of drug rather than in volume (mL). If prescribing in mL, always remember to specify the concentration of the liquid - for insulin prescriptions specify brand name, dose, device and write the word 'UNITS' in full - remember to make maximum dose in 24h clear e.g. paracetamol 500mg every 4-6 hours (max 4 doses in 24 hours)
3. Route:	<ul style="list-style-type: none"> - specify route - only use approved abbreviations for route of drug administration, e.g. inh, IV, IM, SC etc. If necessary, spell out, e.g. intrathecal - Remember that different routes of a drug may not be dose equivalent e.g. IV/PO paracetamol. Therefore prescribing paracetamol PO/IV is not appropriate
4. Timing:	<ul style="list-style-type: none"> - specify frequency - specify times required (circle on drug chart). Use recognised times if at all possible - write start and stop dates. Give a review date for all antibiotics (usually 48h if awaiting results on sensitivity, otherwise the expected end date) - don't forget to write maximum daily dose or frequency for 'as required' medication
5. Clinical Indication:	Include the clinical indication for all drugs whenever possible. Especially for 'as required' medication
<p>Ensure all prescriptions are signed and dated. Also include your contact details in case there is a query with the prescription (state your bleep number/extension number/number for your ward)</p>	

Dose calculations

All drug charts must state clearly the patient's date of birth and a recent weight

- Calculations of drug doses depend on **age, weight or surface area** of a child
- Medication is usually prescribed based on **age or weight**
- The correct doses should **ALWAYS** be checked in the BNFC or local guidelines

Example 1 (prescribing by weight)

Lara, a 10 year old child weighs 30kg. She is experiencing severe pain following an appendicectomy, despite regular analgesia. You are asked to prescribe a stat dose of oramorph. How much oramorph would you give her?

For Lara's age, the BNFC recommends 200 micrograms/kg oramorph every 4 hours

Workings:

$$30\text{kg} \times 200\text{micrograms/kg} = 6000\text{micrograms}$$

$$1000\text{microgram} = 1 \text{ mg}$$

$$\text{Therefore } 6000 \text{ microgram} \div 1000\text{microgram} = 6\text{mg}$$

Example 2 (prescribing by age)

Sarah, a 4 year old child, has a mild chest infection. How much oral liquid co-amoxiclav would you prescribe for her?

For Sarah's age, the BNFC recommends 5mL of 125/31 suspension three times per day (TDS)

Since you have been asked to prescribe the liquid form, remember to include the concentration of the suspension

Drug	CO-AMOXICLAV (125/31)		Dose	5 mL	(08)
Indication/ Stop date/ Additional instructions	CHEST INFECTION. FOR 5 DAYS.		Route	PO	12
Pharmacy	Start date	1/7/14	Signature	P.A. STILLWELL #877	18
	Medicine on admission	New			(22)
Drug			Dose		

Paediatric fluid prescribing guidelines

When prescribing fluids specify:

- Date
- Infusion solution and volume (fluids are administered in standard 500mL bags)
- Rate (mL/hour)
- Additives, if required

Maintenance fluids for children aged over 1 month (24h fluid requirement by body weight)

For every kg from 0 – 10kg	100mL/kg/day or 4ml/kg/hour
For every kg between 11-20kg	+ 50mL/kg/day or 2ml/kg/hour
For every kg over 20kg	+ 20mL/kg/day or 1ml/kg/hour

Maximum fluid in 24h for females – 2 Litres

Maximum fluid in 24h for males - 2.5 Litres

REMEMBER - this will be the maintenance fluid required over 24 hours

The total should therefore be divided by 24 hours to give a rate in mL/hour

Use 0.9% Sodium Chloride or 0.45% Sodium Chloride and 5% Glucose or Hartmann’s (Sodium Lactate Compound)

Consider whether the child requires potassium. Use a pre-mixed fluid bag containing potassium.

Worked example

Jenna, a 10 year old child weighs 32kg. She requires maintenance fluid over the next 24 hours. Please prescribe this.

Working:

- 10kg @ 100mL/kg/day = 1000mL
- 10kg @ 50mL/kg/day = 500mL
- 12kg @ 20mL/kg/day = 240mL
- 24 hour requirement
- = 1740mL → divide by 24 to give a rate in mL/hour = 72.5 mL/h = 72 or 73 mL/h

INTRAVENOUS INFUSION THERAPY							
Date	Infusion solution Enter number of units for blood	Volume	Additives and Dose	Rate/ infusion time	Authorised signature	Batch No./ expiry of infusion solution	Added to and given by
4/7/14	0.9% SODIUM CHLORIDE	500mL	—	73mL/h	PSell. #877 STILWELL		

In paed, fluid bags tend to be 500mL but it's not a rule. Bags may be 1L

Paediatric rehydration fluid prescribing guidelines

Calculating fluid deficit in dehydration

This is based on child's weight and % dehydration

Calculation for fluid deficit:

$$\% \text{ dehydration} \times \text{weight} \times 10 = \text{total fluid deficit (mL)}$$

This should be replaced over 24 – 48 hours

This represents the extra fluid that is needed so should be added to total maintenance requirements i.e. if deficit exists, **fluid requirement = maintenance fluid + fluid deficit**

Worked example

Lucy, a 10 year old child weighs 32 kg

She is clinically 5% dehydrated due to gastroenteritis. To prescribe fluid to rehydrate her over the next **24 hours**:

Working for maintenance over 24 hours:

$$10\text{kg} @ 100\text{mL/kg/day} = 1000\text{mL}$$

$$10\text{kg} @ 50\text{mL/kg/day} = 500\text{mL}$$

$$12\text{kg} @ 20\text{mL/kg/day} = 240\text{mL}$$

$$24 \text{ hour maintenance requirement} = 1740\text{mL}$$

Additional fluid required:

$$(\% \text{dehydration}) \times \text{weight (kg)} \times 10 =$$

$$5 \times 32\text{kg} \times 10 = 1600\text{mL}$$

$$\text{Total fluid required in 24 hours} = 1740\text{mL} + 1600\text{mL} = 3340\text{mL}$$

$$\text{Rate} = 3340 / 24\text{h} = 139 \text{ mL/hour}$$

Now if you prescribe fluid to rehydrate over the next **48 hours**:

Working for maintenance over 48 hours:

$$24 \text{ hour maintenance requirement (working as above)} \times 2 = 1740\text{mL} \times 2 = 3480\text{mL}$$

Additional fluid required for 5% dehydration = 1600mL (working as above)

$$\text{Total fluid required in 48 hours} = 3480\text{mL} + 1600\text{mL} = 5080\text{mL}$$

$$\text{Rate} = 5080 / 48\text{h} = 106 \text{ mL/hour}$$

Controlled drugs

Prescriptions for controlled drugs must contain the following details:

✓ patient's full name, address, age/date of birth and weight
✓ name and formulation of the drug (brand name if necessary)
✓ route
✓ dose
✓ strength of the preparation and dose to be taken
✓ frequency (if prescribed 'when required' a minimum interval for administration should be specified e.g. every four hours and a maximum quantity in 24 hours)
✓ include a start and finish date where appropriate
✓ total quantity of the preparation (or number of dose units) in WORDS and FIGURES (outpatient prescriptions/TTAs only)
✓ date, signature (& PRINT NAME); include contact number and date
<p>FOR EDN prescriptions: Ensure the medication is prescribed electronically as above. The prescription will then need to be printed off, signed and dated before it can be authorised by a pharmacist (remember to send this signed copy to pharmacy).</p>

Unlicensed Medication

The prescribing of unlicensed medicines or licensed medicines for use in unlicensed indications is governed by the [Unlicensed Drug Policy](#), which can be found on the Intranet.

If such a drug is needed a 'Request and registration form to use an unlicensed medication or a licensed medication for an unlicensed indication' must be completed and returned to pharmacy. The form is available from pharmacy or via the [Unlicensed Drug Policy](#). The request is then considered for approval by the DTC. If approved, the medication will be obtained from approved 'Specials Manufacturers' who hold a Manufacturing Specials License issued and regulated by the MHRA.

Doctors prescribing medicines in this way should be aware that they take full responsibility and, in the event of an adverse reaction, may be called upon to justify their action. The doctor is also responsible for informing the patient that the prescribed use is unlicensed and for obtaining consent from the patient. If there is deemed to be significant risks involved written consent is required.

Antibiotics

- **Always include indication, start date, and review date/duration of antibiotic course on the prescription**
- Ensure **allergy status** is checked and that correct alternative antibiotic is prescribed in case of allergy – microbiology advice may be necessary
- *Please refer to 'Guidelines for empiric therapy of infection in children' for advice on antibiotic choice (can be found on the intranet)*
- Remember to rationalise treatment once culture results become available
- Remember that some antibiotics, such as gentamicin, require drug levels in between doses

Additional advice

- All prescriptions for **cytotoxic drugs** in children must be prescribed by a trained consultant (or registrar), as per the NWLHT cytotoxic drugs policy. FY1/FY2 **MUST NOT PRESCRIBE ANY CYTOTOXIC DRUGS**
- When writing **Electronic Discharge Summaries (EDN)**, all regular medication and new medications need to be prescribed on the TTA (to take away). Please note: whether the medication needs to be supplied from hospital or not, all medication the patient is on **MUST** be prescribed on the TTA. Medication that has been either stopped/withheld during this admission should be clearly indicated on the TTA with a clear reason as to why it is stopped / withheld, what the plan is and who will review it. Inform pharmacy once the TTA is done so that medicines can be safely dispensed
- Report any suspected adverse drug reactions to the Medicines and Healthcare Products Regulatory Agency (MHRA)

