

Clinical Practice Guideline

Medication safety: Best practice for effective paediatric ward rounds

RCPCH/NPPG Joint Standing Committee on Medicines,
December 2023

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Guideline to be reviewed in five years

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Executive Summary

A national investigation into weight-based medication errors in children was published in 2022 by the [Healthcare Safety Investigation Branch \(HSIB\)](#), following the case of unintentional repeated ten-fold overdoses with dalteparin in a four year old child who suffered neurological harm⁽¹⁾. To prevent future errors HSIB recommended the Royal College of Paediatrics and Child Health (RCPCH) to identify best practice principles for effective paediatric ward rounds in relation to medications and disseminates them to its members.

This best practice guideline covers the inclusion of medication analysis in the paediatric ward round environment. It aims to ensure that medications are considered at ward rounds to improve safety by encouraging medication reviews, reconciliations, and discussion with children, young people, and their families.

This guideline supplements the NICE guidelines on [medication optimisation](#)⁽²⁾ and on [medication adherence](#)⁽³⁾. It should also be used in conjunction with The Royal College of Physicians (RCP) [best practice principles for the modern ward round environment](#) (written in relation to adult care)⁽⁴⁾. As per the RCP and Royal College of Nurses (RCN) it is important to consider medications on ward rounds as part of reviewing patients' progress and checking safety measures⁽⁵⁾.

Who is it for?

- Healthcare professionals caring for paediatric inpatients
- Commissioners and providers
- Children and young people (CYP) and their families admitted to an inpatient environment

Contents

1. Introduction	6
1.1 Overview	6
1.2 Clinical need	6
1.3 Aims and objectives	6
2. Background	7
3. Clinical Guideline Recommendations	8
3.1 Summary of recommendations for improving the content and structure of a paediatric ward round.	8
3.2 Summary of recommendations for communicating with families, children and young people (CYP) in regard to medications and paediatric ward rounds.	8
3.3 Summary of recommendations for preparing a patient's discharge during paediatric ward rounds.	9
4. Rationale for recommendations	10
4.1 Rationale for clinical practice recommendations for improving the content and structure of a paediatric ward rounds.	10
4.2 Rationale for clinical practice recommendations for communicating with families, children and young people in regard to medications and paediatric ward rounds.	12
4.3 Rationale for clinical practice recommendations for preparing a patient's discharge during paediatric ward rounds.	14
5. Implementation	15
5.1 Barriers and Facilitators	15
5.2 Audit measures	15
5.3 Research Recommendations	16
6. References	17
Appendix 1. Methodology used to arrive at recommendation	19
Appendix 2. Search Strategy	23

Definitions and acronyms

CYP	Children and Young People
EPMA	Electronic Prescribing and Medication Administration
GDG	Guideline Development Group
HSIB	Health and Safety Investigation Board
MDT	Multidisciplinary Team
NHS	National Health Service
NPPG	Neonatal and Paediatric Pharmacy Group
RCN	Royal College of Nurses
RCP	Royal College of Physicians
RCPCH	Royal College of Paediatrics and Child Health

2. Background

The medical ward round is a complex clinical process encompassing multiple processes occurring in conjunction with one another⁽⁴⁾. As part of the ward round, active, safe checking against avoidable harm, such as medications should be undertaken. Paediatric patients add another level to the complexity in relation to medication review. Variation amongst calculations for dose based on age, weight or body surface area, formulations, and strengths of

3. Clinical guideline recommendations

3.1 Summary of recommendations for improving the content and structure of a paediatric ward round.

We recommend that for CYP in hospital, the ward round following admission* should establish:

1. That existing medications have been prescribed [1C].
2. Whether changes to existing medications are required due to the clinical situation with clear documentation on withholding, stopping, or changing medication if required [1D].
3. That known medication allergies/intolerances have been recorded [1C].

We recommend that for CYP in hospital, every ward round should:

4. Review any new medicines or changes to medications (correct drug/dose/route/indication/formulation/frequency) [1C].
5. Review all prescribed medications when the clinical condition of the patient has changed (improved or deteriorated) [1D].
6. Assess the impact (efficacy and adverse drug reactions) of all medications of the patient and adjust as required [1D].

We recommend that for all CYP in hospital:

7. Regular reviews should be undertaken at regular intervals (e.g., ward rounds, medication review rounds) depending on the clinical state of the patient.

*first ward round/post-take round/first consultant review following admission

3.2 Summary of recommendations for communicating with families and CYP in regard to medications and paediatric ward rounds.

We recommend that during ward rounds, health professionals should arrange a suitable opportunity to confirm with CYP and families:

1. Their understanding of new medicines during an admission [1C].
2. Any changes to prescribed medications [1C].
3. Their concerns about medications during an admission [1D].

3.3 Summary of recommendations for preparing a patient's discharge during paediatric ward rounds.

We recommend that during ward rounds prior to discharge, health professionals should:

1. Confirm with CYP and their families their means of access to medications in the home or community environment [1D].
2. Ensure provision of medications, necessary equipment, and advice on how to get repeat prescriptions (if required) [1D].
3. Provide colleagues in primary care with clear contemporaneous communication on any updated medications (including use of the Discharge medicines Service to provide information to the community pharmacy) [1C].

4. Rationale for recommendations

4.1 Rationale for clinical practice recommendations for improving the content and structure of a paediatric ward rounds.

Recommendation:

1. We recommend for CYP in hospital, the ward round following admission* should establish that existing medications have been prescribed on admission

*first ward round/post-take round/first consultant review following admission

Rationale:

No relevant studies were identified for this review question. The importance of medicine reconciliation has been highlighted as an important safety initiative by national organisations⁽³⁾.

Incomplete or inaccurate communication of existing medications at admission can lead to increase in prescribing errors and potential harm to patients^(23, 24). The reconciliation should happen within the first 24 hours of admission and come from multiple sources when appropriate, with family involvement⁽³⁾. This should also include medications that families may self-administer. There was 93% agreement with this recommendation in the Delphi consensus process (consensus reached). The Delphi panellists highlighted that although this should be done every ward round there is often a reliance on the pharmacist on the ward to undertake this.

Recommendation:

2. We recommend for CYP in hospital, the ward round following admission* should establish whether changes to existing medications are required due to the clinical situation.

*first ward round/post-take round/first consultant review following admission

Rationale:

No relevant studies were identified for this review question. Medications should be adapted and altered where appropriate and with discussion with both other healthcare professionals such as pharmacists and families. Communication should be clear particularly where families may be self-administering medications in hospital. There was 93% agreement with this recommendation in the Delphi consensus process (consensus reached).

Recommendation:

3. We recommend for CYP in hospital, the ward round following admission* should establish that known medication allergies/intolerances have been recorded.

*first ward round/post-take round/first consultant review following admission

Rationale:

No relevant studies were identified for this review question. The Department of Health has highlighted the need for allergy status to be recorded in patient records when prescribing medications. Medication allergies or intolerances should be ascertained at the time of admission or first prescription. Additional questions regarding other substances not just medications should be included in allergy lists. There was 93% agreement with this recommendation in the Delphi consensus process (consensus reached).

Recommendation:

4. We recommend that for all CYP in hospital, every ward round should review any new medicines or changes to medications (correctdrug/dose/route/indication/formulation/frequency).

Rationale:

No studies were identified as being directly relevant for this review question. However, the implementation of a checklist during ward rounds has been shown to reduce errors in prescription writing⁽²⁰⁾. Medications should also be reviewed for interactions with other medicines. There was 96% agreement with this recommendation in the Delphi consensus process (consensus reached).

Recommendation:

5. We recommend that for all CYP in hospital, every ward round should review all prescribed medications when the clinical condition of the patient has changed (improved or deteriorated).

Rationale:

No relevant studies were identified. There was 89% agreement with this recommendation in the Delphi consensus process (consensus reached). Panellists highlighted that reviewing medications during an acute deterioration is not the priority over-resuscitation and stabilisation of patients, however, they acknowledged the importance of reviewing medications at the earliest opportunity after suchgthtere was 89% agreem

Recommendation:

6. We recommend that for all CYP in hospital, every ward round should routinely assess the impact (efficacy and adverse drug reactions) of all medications of the patient and adjust as required.

Rationale:

No relevant studies were identified for this review question. There was 86% agreement with this recommendation in the Delphi consensus process (consensus reached). The GDG noted that details regarding medications may change throughout a patient's admission and Delphi panellists highlighted the importance of reviewing medications. The HSIB report highlights that medications can cause adverse drug effects⁽¹⁾. Adverse

Rationale:

No relevant studies were identified for this review question. However, NICE guidelines highlight the use of shared care and decision making, this extends to decisions regarding medication changes⁽²⁶⁾. A study of readability of patient information leaflets

4.3 Rationale for clinical practice recommendations for preparing a patient's discharge during paediatric ward rounds.

Recommendation:

1. We recommend that during ward rounds prior to discharge health professionals should confirm with CYP and their families means of access to medications in the home or community environment.

Rationale:

Studies have examined barriers to obtaining medications but not interventions to improve access^(30, 31). There was 93% agreement with this recommendation in the Delphi consensus process (consensus reached). GDG members agreed that it is useful to have a contact regarding access of medications if required.

Recommendation:

2. We recommend that during ward rounds prior to discharge health professionals should ensure that CYP and their families are provided with medications, necessary equipment, and advice on how to get repeat prescriptions (if required).

Rationale:

NHS improvement have highlighted services that can be used to ensure patients are supplied with required medication upon discharge⁽³²⁾. There was 93% agreement with this recommendation in the Delphi consensus process (consensus reached). Delphi panellists highlighted that this should be tasked to an individual for accountability, ideally a prescriber or pharmacist with knowledge of the medications.

Recommendation:

3. We recommend that during ward rounds prior to discharge health professionals should provide colleagues in primary care with clear contemporaneous communication on any updated medications.

Rationale:

No relevant studies were identified. The Department of Health highlight the importance of clear communication between colleagues in order to reduce potential errors that may occur⁽²⁷⁾. Interventions to improve current communications may be beneficial such as discharge medicine services or electronic records that update in real time⁽³³⁾. There was 93% agreement with this recommendation in the Delphi consensus process (consensus reached).

5. Implementation

5.1

5.3 Research Recommendations

The GDG identified several topics where the evidence was lacking and propose the following research recommendations.

- For CYP inpatients, does specific/enhance communication with families reduce medication errors?
- For CYP, what interventions reduce medication errors on paediatric ward rounds?
- For CYP, does the use of EMPA systems help to reduce paediatric medication errors?

19.

Appendix 1:

For each recommendation the quality of evidence has been graded as:

- A** (high)
- B** (moderate)
- C** (low)
- D** (very low)

Grade A evidence means high quality evidence that comes from consistent results from well performed randomised controlled trials, or overwhelming evidence of another sort (such as well-executed observational studies with very strong effects).

Grade B evidence means moderate quality evidence from randomised trials that suffer from serious flaws in conduct, consistency, indirectness, imprecise estimates, reporting bias, or some combination of these limitations, or from other study designs with special strength.

Grade C evidence means low quality evidence from observational evidence, or from controlled trials with several very serious limitations.

Grade D evidence is based only on case studies or expert opinion.

Level 1 recommendation is a strong recommendation to do (or not to do) something where the benefits clearly outweigh the risks (or vice versa) for most, if not all patients.

Level 2 recommendation is a weaker recommendation, where the risks and benefits are more closely balanced or are more uncertain.

Comments on behalf of: Esther Ip, Feng Li (Croydon University Hospital), Ashifa Trivedi, Will Carroll (University Hospital of North Midlands), Ebraheem Junaid (University Hospitals of North Midlands), Nick Lipscomb, Joanne Shaw, Oliver Rackham (Betsi Cadwaladr University Health Board).

Table 1: comments from scoping document

Table 2: PICO characteristics

Population	Intervention	Comparison	Outcome
<p>CYP aged between 0 and equal or less than 18 years old. Population is not restricted to the United Kingdom (UK), we will examine papers from all over the world.</p>	<p>Any intervention or combination of interventions implemented that alters how paediatric ward rounds review inpatient medications including (but not restricted to) acronyms, checklists and inclusion of different health care professionals in the ward round environment.</p>	<p>Standard ward round or inpatient review practice that is undertaken for CYP in a hospital environment.</p>	<p>Reduction in prescribing medication errors, improvement in documentation concerning inpatient medications, healthcare professionals' opinion regarding improvement in medication prescribing in the ward round environment, reduction in adverse events and adverse drug reactions due to the implementation of the intervention.</p>

Appendix 2: Search Strategy

Clinical Questions

1. For children admitted to hospital, what interventions improve medication safety on ward rounds?

Sources

Pubmed, Web of Science and Cochrane Register of Trials.

Inclusion Criteria

Population:

Children aged less than or equal to 18.

Study Designs:

All study designs included. Systematic reviews will be screened for eligible studies. e.g.;

1. Randomised Controlled Trials (RCT).
2. Non-randomised studies (NRS) if no RCT identified, if adjusted for key confounders:
 - a) Age
 - b) Health at baseline
 - c) Comorbidities

Prognostic observational studies and systematic reviews of prognostic observational studies.

Exclusion Criteria

The guideline will not address:

If people aged over 18 years old are included, if they are not done in a hospital inpatient setting such as an emergency department. If they examine interventions that are implemented after a ward round has been completed.

Population:

Children and young people aged 18 or under.

Study Design:

All studies are considered eligible.

Search (MeSH) Terms

Search Terms	
1	Paediatric
2	Pediatric
3	Child
4	Child*
5	Paed*
6	children
7	infant
8	neonate
9	Neonat*
10	baby
11	teenager
12	adolescent
13	pubescent
14	Medicine*
15	Medica*
16	Prescip*
17	Drug*
18	Prescription*
19	Safety
20	Safe*
21	Improv*
22	Ward round
23	Inpatient review
24	Medication review

Search methodology

The clinical questions form the basis of the systematic review of all evidence answering these