Safe Prescribing Workshop

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Vice President, Education, RCPCH
Consultant Paediatrician, Great Ormond Street Hospital
Outline

• Background
• Underlying issues
• Participant experience
• Strategies
• Discussion
• Further actions
• Conclusions
• Future suggestions
Prescribing Errors

- international problem
- patient safety issue
- complex causal relationship
- poorly understood
- damages training
Medication Errors in Children

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Centre for Safe Medication Practice and Research
Department of Pharmacology and Pharmacy
University of Hong Kong

Global Research in Paediatrics – Network of Excellence (GRiP)

“A cheerful heart is good medicine, but a crushed spirit dries up the bones.
(Proverbs 17:22)”.
Great variation in the paediatric medication error rates reported due to differences in study design

- prescribing error rate 0.45 to 30.1 errors per 100 orders in the USA

- drug administration error rates varied from 0.6% to 27%

Dosing errors are the most common type of errors in paediatrics (particularly 10-fold or greater overdose caused by calculation errors)
What is your experience?

• personal…

• organisational
  – prescribing error
  – administration error
  – ‘near miss’ event

• what measures are in place to minimise risk?

• is this enough?
How big is the problem in our hospital?

**Results:** 391 *prescribing errors* were identified, giving an overall prescribing error rate of **13.2% of medication orders** (95% CI 12.0 to 14.5). There was great variation in prescribing error rates between wards.

Incomplete prescriptions were the most common type of prescribing error, and dosing errors the third most common. **429 medication administration errors** were identified; giving an overall incidence of **19.1%** (95% CI 17.5% to 20.7%) *erroneous administrations*. Errors in drug preparation were the most common, followed by incorrect rates of intravenous administration.

**Conclusions:** Prescribing and medication administration errors are not uncommon in pediatrics, partly as a result of the extra challenges in prescribing and administering medication to this patient group. The causes and extent of these errors need to be explored locally and improvement strategies pursued.

**Setting:** 11 wards (prescribing errors) and 10 wards (medication administration errors) across five hospitals (one specialist children's teaching hospital, one non-teaching hospital and three teaching hospitals) in the London area (UK).

**Main outcome measures:** Number, types and rate of prescribing and medication administration errors.
Clinical Responsibility

- Clinical Governance (patient safety) - Hospital Trust (organisation)
- standards of care – NHS
- training standards – Colleges
- trainee performance – Deaneries
- doctor indemnity – NHS and insurance
### RCPCH Curriculum

#### Good Clinical Care

<table>
<thead>
<tr>
<th>Knowledge, Skills and Performance</th>
<th>Assessment Standard 12</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard 12</strong></td>
<td></td>
</tr>
<tr>
<td>Level 1 (ST4-5) <strong>knowledge and skills in safe prescribing of common drugs in paediatrics</strong></td>
<td>Level 2 (ST4-5) improving safe prescribing in paediatrics and in advising others appropriately</td>
</tr>
<tr>
<td>Trainees will:</td>
<td>Level 3 (ST6-8) responsibility for safe prescribing in common and complex situations and for the supervision of others</td>
</tr>
<tr>
<td>Know and understand the pharmacological basis for treatments</td>
<td>Be able to prescribe safely and supervise the prescription for the newborn and for children of all ages</td>
</tr>
<tr>
<td>Be able to prescribe safely for the newborn and for children of all ages</td>
<td>Be aware of different patterns of drug reaction and of the common precipitants of cutaneous drug reactions</td>
</tr>
<tr>
<td>Know the approved indications and justification for prescribing drugs in common paediatric problems</td>
<td>be aware of how to appropriately investigate an adverse drug effect or prescription error</td>
</tr>
<tr>
<td>Know the pharmacokinetics and pharmacodynamics of commonly prescribed drugs</td>
<td>Know about drug interactions of commonly used drugs</td>
</tr>
<tr>
<td>Know about the drug interactions of commonly used drugs</td>
<td>Respond appropriately to errors of prescription or administration and be able to talk to parents about this</td>
</tr>
<tr>
<td>Be aware of possible drug interactions of commonly used drugs where more than one drug is prescribed</td>
<td>be able to prescribe for newborn babies and breastfeeding mothers</td>
</tr>
<tr>
<td>Know how to report adverse affects</td>
<td>be able to prescribe for children with reduced renal function using the BNF for children and understand when more experienced advice may be necessary</td>
</tr>
</tbody>
</table>

**Royal College of Paediatrics and Child Health**
RCPCH Assessment

<table>
<thead>
<tr>
<th>Year of Training</th>
<th>Assessment of competence</th>
<th>Assessment of performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td></td>
<td>Multi-source feedback annually</td>
</tr>
<tr>
<td>ST1</td>
<td>MRCPCH part 1</td>
<td></td>
</tr>
<tr>
<td>ST2</td>
<td>MRCPCH part 2 written</td>
<td>Mini Cex</td>
</tr>
<tr>
<td>ST3</td>
<td>MRCPCH clinical</td>
<td>CBD</td>
</tr>
<tr>
<td>Level 2</td>
<td></td>
<td>Multi-source feedback annually</td>
</tr>
<tr>
<td>ST4</td>
<td></td>
<td>CBD</td>
</tr>
<tr>
<td>ST5</td>
<td></td>
<td>Mini Cex</td>
</tr>
<tr>
<td>Level 3</td>
<td>Structured paediatric assessment</td>
<td>Multi-source feedback annually</td>
</tr>
<tr>
<td>ST6</td>
<td></td>
<td>CBD (with external validation)</td>
</tr>
<tr>
<td>ST7</td>
<td></td>
<td>SAIL</td>
</tr>
<tr>
<td>ST8</td>
<td></td>
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</tbody>
</table>
Prescribing Assessment

- entry to specialty training
- part of induction process
- completion of training (penultimate year)
- sub-specialty training
- within workplace-based assessment
- if concerns about practice
You will need to put your own trust name here. Throughout the presentation words that are highlighted red should be changed in accordance with local policies. The presentation should be as interactive as possible.
Paediatric Prescribing Summary

Don’t forget:

- Age
- Weight
- Show your calculations initially
- Always use local guidelines or BNFC to check doses
- Prescribe in dose rather than mls whenever possible
- If you are ever unsure, always ask for help from a senior colleague or pharmacist
Trust Assessment

Prescribing for Children - Assessment

Birmingham Children’s Hospital

In order to be assured that new medical staff are competent in prescribing for children, the Trust has introduced this assessment tool. All new medical staff will be required to complete it on starting at Birmingham Children’s Hospital. It has been endorsed by the Trust Medication Incident Group and Post Graduate Tutor. Please complete the following scenarios and return the assessment in the envelope provided by the 9th August 2010.

You may use the BNFC, and a calculator.

A summary of the Birmingham Children’s Hospital prescribing guidelines are attached at the end of the document.

We estimate that the test will take you 30-45 minutes. There are 5 questions, some with 2 parts.

The results will be fed back to you and your educational supervisor. If you do not return the assessment by the above date it will be assumed that your score is zero and your educational supervisor and college tutor will be informed. No study leave will be granted unless the assessment is completed as agreed with Dr Clive Ryder and Dr Ritchie Marcus.

Name (print): ____________________________

GMC number: ____________________________

Email address: ____________________________

Speciality at BCH: ________________________

Signature: _______________________________

Educational supervisor: ____________________

We hope that you will also find this assessment useful as a learning tool. In addition we will be running a series of workshops to improve prescribing and minimise risks of medication errors which you are invited to attend. Dates will be posted on the Intranet or you will be notified of the dates via the email address you have provided.

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IN-PATIENT MEDICATION ADMINISTRATION RECORD

Birmingham Children’s Hospital
NHS Foundation Trust

<table>
<thead>
<tr>
<th>Hospital NHS</th>
<th>Surname</th>
<th>First Name</th>
<th>Address</th>
<th>Age</th>
<th>Date of Birth</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

Drug Allergies

Specify Drugs: ____________________________________________

Specify Allergy Type: ______________________________________

Signature: ______________________________ Date: ____________

NONE KNOWN

Signature: ______________________________ Date: ____________

Details of Supplementary Charts

New/Amendment to: Anticoagulant: Start [ ] End [ ] Oxygen: Start [ ] End [ ]

Supplementary Infusion Chart: Patient Controlled Analgesia/ARV: Start [ ] End [ ]

For Multiple Medication Charts: Insulin: Start [ ] End [ ] Syringe Driver: Start [ ] End [ ]

Other (please specify): ________________________________

Medication on Supplementary Charts Should be Recorded On The Drug Chart

PRESCRIPTION FOR ONCE-ONLY AND PRE-ANAESTHETIC MEDICATION

<table>
<thead>
<tr>
<th>Date</th>
<th>Medication (Supp. Name)</th>
<th>Dose</th>
<th>Route</th>
<th>Time to Begin</th>
<th>Prescriber’s Signature</th>
<th>Pharmacy</th>
<th>Date</th>
<th>Time Given</th>
<th>Checked By</th>
</tr>
</thead>
</table>

Royal College of Paediatrics and Child Health
Leading the way in children’s Health.
Since Clinical Governance responsibility for safe prescribing rests with each Trust, the College recommends that local guidelines are established to determine the capacity of each individual to prescribe safely based on the outcomes from the prescribing assessment.
Paediatric Prescribing Assessment Tool (PPT)

Paediatric Prescribing Tool: Scenarios

Scenario 1

Name: John Smith  Age: 7 years  DOB: 04/01/2004
Today's Weight: 23kg
Address: 27 Station Road, New Town, Middlesex M2 5MT
Hospital Number: 351947
Consultant: Dr. Horne  Ward: G2
Admission Date: Use today's date

John has been admitted with suspected appendicitis, his temperature is 38°C. Mum explains that the last time he had amoxicillin he developed a rash. She also tells you he suffers from asthma and uses a Budesonide (Pulmicort) inhaler (100 microgram per puff) 2 puffs twice a day via spacer. He also uses, as required, a Salbutamol inhaler (100 microgram per puff) 1-2 puffs via spacer up to a maximum of four times a day.

1. Write up his drug chart based on the history above.
2. Write up regular oral paracetamol, using the 250mg/5ml suspension at a dose of 15mg/kg, rounding to a measurable dose and given 6 hourly.

A decision is made to take him to theatre, he needs intravenous maintenance fluids as he is nil by mouth.

3. Use the current BNFC (Fluids, parenteral) to prescribe the correct volume of maintenance fluid as Sodium Chloride 0.9% for the first 6 hours. No additives are required for this patient.

Post operatively, John develops severe pain and at 1800 hours you are asked to prescribe some analgesia.

4. Use the current BNFC to write up a single intravenous dose of Morphine, to be given immediately.

<table>
<thead>
<tr>
<th>Category</th>
<th>Answer</th>
<th>Suggested requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographic details</td>
<td>Name</td>
<td>Essential</td>
</tr>
<tr>
<td></td>
<td>Date of Birth</td>
<td>Desirable</td>
</tr>
<tr>
<td></td>
<td>Hospital Number</td>
<td>Essential</td>
</tr>
<tr>
<td></td>
<td>Weight</td>
<td>Desirable</td>
</tr>
<tr>
<td></td>
<td>Demographic details completed on each page, date of weight, ward, date of admission &amp; Consultant</td>
<td>Desirable</td>
</tr>
</tbody>
</table>

Allergy:

- Allergy box: Penicillin or Amoxicillin
- Rash, signature: Essential

Budesonide:

- Drug: Budesonide (or Pulmicort)
- Route: Inhaled (may not be necessary if dose specified in "puffs")
- Frequency: Twice daily/6/12 hourly
- On chart: On "Regular meds" part of chart
- Signature: Essential
- Indication: Asthma or Wheeze
- Extra instructions: Bleep number, identifier, printed name

Salbutamol:

- Drug: Salbutamol (or Ventolin)
- Dose: 100 microgram per 1-2 puffs or actuations
- Route: Inhaled (may not be necessary if dose specified in "puffs")
- Frequency: Maximum 4 hourly /& or specify maximum dosage
- On chart: On "As Required" part of chart
- Signature: Essential
- Indication: Asthma or Wheeze
- Extra instructions: Bleep number, identifier, printed name & spacer device
London experience

- 114 trainees entering ST1 training
- attended 1 day induction programme
- safe prescribing teaching included
- PowerPoint in small group format
- initial evaluation positive
- e-survey (QuestionPro) after 5 months
Electronic Survey results

- 86% response rate overall
- 90% previous paediatric prescribing experience
- 50% had no prior paediatric prescribing training
- 25% no assessment previously, 40% adult only
- 70% training relevant and aided practice
- 55% further site specific training
- 25% prescribing skills assessed locally
- 38% prescribing errors
Did you feel prepared to take on the responsibility of prescribing in ST1
Why is paediatrics so different?

• unlicensed & off label drugs
• age band
• weight based prescribing
• gestation based prescribing
• dose rounding
• indication based prescribing
Possible Interventions

Prescribing

A prescription for medication

SUMMARY

Background: UK medical students’ confidence in their prescribing skills is low, and a significant proportion of prescriptions written by final year (FY) doctors contain errors. The Prescribing Safety Assessment (PSA) is a national examination aimed at assessing prescribing competence in undergraduate, but very few PSA-specific preparatory resources are available for students.

Methods: A needs analysis was performed and an e-learning e-tutorial (Prepare for the PSA) was designed. The e-tutorial consists mainly of a practice exam that is a national tool (the prescribing

Strategies for Reducing Prescribing Errors in a Paediatric Cardiac Intensive Care Unit

Lynne Cochrane
Senior Pharmacist CICU

Annette McQuillan
Research Nurse

Great Ormond Street
Hospital for Children
NHS Foundation Trust
Tutor experiences

• is it part of your role/responsibility?
• what approach has your department/Trust taken?
• is there anything that you do routinely?
• what does your institution require to demonstrate safe practice?
• have you introduced any additional measures?
Paediatric medication error (PME): the nature of the problem in the UK and what works to address it – a systematic review

Katy Sutcliffe - September 2014
Research

Initial aim: To identify research evidence and describe the research field in relation to Paediatric Medication Error (PME)

Design: Systematic Review - to provide a comprehensive and unbiased account of research evidence on PME

3 questions for in-depth analyses:

‘What is the nature and extent of PME in the UK?’

‘What works to reduce the incidence of PME?’

‘What are key features of effective interventions?’
PME in UK: Findings

Strong Evidence

- **primary care**: off-label prescribing resulting in dose errors common (1 in 4 children Ekins Daukes 2004) - wide range of drugs
- Type of drug/age of patient affects whether underdoses or overdoses more likely to be prescribed

Promising Evidence

- **acute care** - dose errors most common error type - account for approx. 1/5 of all errors

Evidence Gaps

- reporting voluntary & inconsistent – inaccurate picture
What works to reduce PME?

Multiple studies on 3 intervention types

• Electronic prescribing (EP)
• Clinical decision support tools (CDST)
• Education

Single studies on 6 intervention types

• Ward based pharmacist support
• Paediatric formulation
• Pre-printed structured prescription order forms
• Integrated care pathways
• Mass concentration labelling
• Patient history taking
Paediatric Prescribing Principles - 3. Prescribing in Paediatrics

Why is it important to learn about this subject?

Now read this quote and refer to the diagram opposite which reflects its message. When you are ready click the Forward button.

The benefits and risks of electronic prescribing

Screen 1  Screen 2  Screen 3  Screen 4

POE - Prescriber Order Entry

Consultant: DRX  Ward: PAED OBG

Hospital No:  Nat No:  Date of Birth: 17-Oct-2011  Age: 17  months

Allergies: ***No Known Drug Allergies***

Active Medications  Discontinued Medications  Dose  Frequency

- AZITHROMYCIN 200 mg in 5 mL Suspension
- PREDNISOLONE 5 mg SOLUBLE Tablets (as sodium 20 mg)
- PRATROPIUM BROMIDE 20 micrograms per metered 1 puff(s)
- PRATROPIUM BROMIDE 600 micrograms in 2 mL Re 250 microgram
- IBUPROFEN 100 mg in 5 mL Sugar-Free Suspension
- PRATROPIUM BROMIDE 20 micrograms per metered 1 puff(s)

Regular Medications

- E24H - every 24 hours
- 1XAD AM - ONCE a DAY in
- 3XAD AM - THREE times a day
- 6XH - every 6 hours PRI

As required (PRN) Medication

- SALBUTAMOL 25 mg in 5 mL Suspension
- SALBUTAMOL 25 mg in 2 mL Respirator Solution
- SULBUTAMOL 100 mg MDI Aerosol Inhaler 10 puff(s)

Search...
RCPCH Strategy

- curriculum review– [undergraduate curriculum]
- ST selection
- prescribing e-learning materials
- assessment
  - PPT (Paediatric Prescribing Tool)
  - MRCPCH
  - ?prescribing mini-CEX/CbD
  - START
- Safe Medicines Network
- Paediatric Care Online project
- ePrescribing development
Find Information

LIBRARY
- Point-of-Care Quick Reference
- AAP Textbook of Pediatric Care
- Red Book
- Bright Futures
- Performing Preventive Services
- Pediatric Drug Lookup
- Antimicrobial Therapy Guide
- Visual Library
- Webinars
- Pediatric Care Updates
- AAP Policy

TOOLS
- Interactive Periodicity Schedule
- Signs & Symptoms Search
- Algorithms
- Patient Handouts
- Forms & Tools
- Clinical Calculators

Search

Search PCO

Pediatric Care Updates

- Caregiver-Fabricated Illness in a Child: A Manifestation of Child Maltreatment
- Clinical Practice Guideline for the Diagnosis and Management of Acute Bacterial Sinusitis in Children Aged 1 to 18 Years
- Defining Pediatric Malnutrition: A Paradigm Shift Toward Etiology-related Definitions

News

- New Updates and Content on PCO!
- Free PCO Webinar: Differentiating GER from GERD: To "D" or not to "D"
- PCO App and iOS 7
- More...

Image of the Week

Burn chart for estimating the extent of injury (...)

Go to myPCO...

Go to Mobile...
Results for: codeine

Rx Codeine - Alerts | more...
Health Canada Recommends the Use of Codeine Only in Patients Aged 12 and Older June 2013 Health Canada has issued notice that the use of codeine products in children associated ...

Rx Promethazine and Codeine - Basics | more...
Codeine and Promethazine ...

Rx Promethazine, Phenylephrine, and Codeine - Basics | more...
Codeine, Phenylephrine, and Promethazine - Phenylephrine, Promethazine, and Codeine ...

Rx Acetaminophen and Codeine - Basics | more...
International issues: Codex Brand name for acetaminophen/codeine [Brazil], but also the brand name ... and Codeine - Tylenol® with Codeine No. 3 - Tylenol® with Cod ...

Rx Guaifenesin and Codeine - Basics | more...
Terms - Codeine and Guaifenesin ...

Use of Codeine- and Dextromethorphan-Containing Cough Remedies in Children
Use of Codeine - and Dextromethorphan-Containing Cough Remedies in Children -- Committee on Drugs 99 (6): 918 -- AAP Policy Use of Codeine - and Dextromethorphan have similar adverse effects, and have ...

Rx Dextromethorphan - Additional Information | more...
Dextromethorphan 15-30 mg equal 8-15 mg codeine as an antitussive ...

Rx Iodine - Basics
Medication Safety Issues Sound-alike/look-alike issues: Iodine may be confused with codeine, Iopidine®, Lodine Generic Availability (U.S.) Yes Therapeutic Category ...

Rx Paregoric - Pharmacology
and as parent compound (morphine, codeine, papaverine, etc) ...

Chapter 167: Cough - Suggested Resources | more...
Pediatrics ...

Chapter 250: Common Cold - AAP Policy Statement

Chapter 54: Management of Acute Pain in Children - Role of Weak Opioids | more...
such as codeine, tramadol, oxycodone, or hydrocodone for the outpatient treatment of moderate pain or when NSAIDs alone fail to control mild pain. A hepatic microsomal to morphine, and in 36 ...
Conclusions

- paediatric prescribing is clinical risk area
- competence is clinical governance issue
- Hospitals should assess readiness
- Schools should focus on training/support
- College should make tools available for assessment (PPAT/DOPS etc)
- national requirement for ePrescribing/CDST
Any questions?