Special order medicines in paediatrics

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Q A Symposium - 2012

Birmingham Children’s Hospital
We are one of the leading paediatric teaching centres in the country

- 300 beds
- 31 PICU beds
- Inpatient admissions 20,952
- Outpatient attendances 155,954
- Emergency Dept. attendances 46,274
- Day-case admissions 16,131
- Total patient episodes 239,311

Pharmacy Department

- 23 pharmacists
- Senior Nurse specialist- Medicines Management
- Quality manager
- 24 technicians
- 9 support staff
- 7 Students
- (4 robots!)
- No Laboratory/Aseptics facility

Specials have not been assessed by the regulatory authority for safety, quality and efficacy in the same way as licensed medicines, therefore they have no Summary of Product Characteristics (SPC) outlining the dose, contra-indications, storage and side effect profile. Patient information leaflets are not routinely available for Specials.

There is a Lack of knowledge of the kinetics and dynamics of excipients such as propylene glycol, ethanol, polysorbates and parabens and the influence of developing physiology in their handling. (T Nunn EJHP 2012;19:69)

Excipients are also a licensed medicine issue!
Unfortunately many countries still take the view that the identity of the additives and excipients in medicines is a trade secret (WHO Report 2007).

Deaths in neonates have been associated with administration of 99-234 mg/kg/day benzyl alcohol in large-volume parenteral solutions or endotracheal solutions.

A study of 170 patients who received medications via continuous infusion received cumulative daily doses of up to 21 times (106.3 mg/kg/day) an acceptable daily intake (5mg/kg/day) of Benzyl Alcohol and 180 times (4554.5 mg/kg/day) the acceptable daily (25mg/kg/day) intake of propylene glycol.

Exciipients

Four questions...

......Rehydration Salts

1. Is it unreasonable to ask a patient to make this themselves?
2. Should we prescribe the bulk ingredients?
3. How likely is the potassium to cause a problem?
4. How accurate do we need to be when using these solutions children?
5. P.S – Regional LPC discussion!

Specials can be obtained from a range of sources by pharmacists and are not all manufactured in the same way. This means that the quality, bioavailability and consistency of Specials can vary even when the same product is prescribed.
Formulation

- Captopril oral liquid one of 50 most commonly used extemporaneous preparations in UK
- Twelve centres reported its preparation, comprising three different formulations with shelf-lives ranging from 7 to 28 days.
- Research found serious issues with regard to the lack of consistency and potential for toxicity with Captopril liquid.
- 4 hospitals dispensed Captopril tablets for crushing and dissolving in water before administration.
- 22 hospitals used nine different liquid formulations, including imported products, "specials" and extemporaneous formulations.

Expiry dates

- Lack of uniformity in data presented in literature
- No nationally accepted standard expiry date data.

Accessibility to medicines

- Hospital requested G.P. to prescribe Captopril 5mg/5ml, 5mg three times a day.
- GP prescribed Captopril Oral liquid 5mls three times daily.
- Pharmacy obtains 50mg/5ml and labels it 5mls three times a day.

Dispensing
<table>
<thead>
<tr>
<th>Product</th>
<th>Published price per item (100ml. 30 day's supply)</th>
<th>Cost per dose changed by PCT*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simvastatin 5mg/5ml oral suspension</td>
<td>£0.35</td>
<td>£1.29/0.22 (500 ml)</td>
</tr>
<tr>
<td>Doxazosin 4mg/5ml oral solution</td>
<td>£1.25</td>
<td>£5.05</td>
</tr>
<tr>
<td>Loratadine 5mg/5ml oral solution</td>
<td>£0.20</td>
<td>£0.60</td>
</tr>
<tr>
<td>Propranolol eye drops 0.2% preservative free</td>
<td>£55%</td>
<td>£75%</td>
</tr>
</tbody>
</table>

*Data supplied by Hospital Apothecary Ltd (HAPL), January 2008. **Cost represents a total of 1000 units of Propranolol 50mg/5ml.

Table 3.4. Cost comparison of special ordered by a PCT in the North West of England (February 2009) with alternative published supplier cost.

£693.00

£1.61

£354.86

£14,877.00

Coconut Oil 75% in Emulsifying Ointment

NHSBSA £253.05

BCH FP10 £1027

BCH £6.04

Top 500 (by NIC) Special Order “Drug Tariff” Products (Quarter to March 2012) - liquids
Multiple bottle effect?

Hidden costs

- Specialist nurse costs
  - 3 month study *across 6 centres
  - 7.3 patients on 7.8 occasions
  - Cost to NHS £28k p.a.
- Junior Doctor costs
  - BCH Pharmacy emergency supplies “rescue remedies” 80 occasions each month

**What is being done?**

- BP monographs
- the **Modric study**: An investigation of drug manipulation for dose accuracy in paediatric practice R H Richey et al. Arch Dis Child 2011
- QC NW Model tender arrangements
- MHRA: RUM (Review of Unlicensed Medicines)
- Drug Tariff

**What we did…**

The results show that there is a wide variety between independent contractors in quality assurance and standards for pharmacy-made medicinal products. There is a gap in quality assurance between preparation in pharmacies and manufacture at the industry level. The terminology used for pharmacy-made medicinal products varies greatly between the different states. There is also a quality and safety gap between medicinal products prepared in pharmacies and in hospital wards. Inadequately trained contractors pose serious quality and safety requirements as defined for preparations.
Pilot to Project

- The Pilot Features
  - PCT MM team identifies subject from ePact data
  - GP surgery sends a Patient Specific Direction (PSD)
  - BCH screens Patient Specific Direction
  - Partner sources special, dispenses and delivers to patient

- The Project
  - Any former BCH patient qualifies for the scheme
  - GP administrative refusal or discharged patient on complex therapy
  - BCH screens, administers and arranges dispensing and delivery
  - Consultants prescribe and review

Project Features

- Primary care - Secondary care partnership
- Governance
- Financial arrangements
  - Transparency
  - Defining what a saving would look like
  - Agreeing cost and savings distribution
  - Communication - addressing interface issues!

Finally - Further quality developments

- Worked with our Lab to open a QC lab
- Introduced Live expiry date testing
- Reformulation – less excipients
- Packaging, bar codes etc
- Sensible costing model
- Formulation research and development (Aston, BCH and Quest)
  - New Melt vehicle

Thank you for listening

Q&A