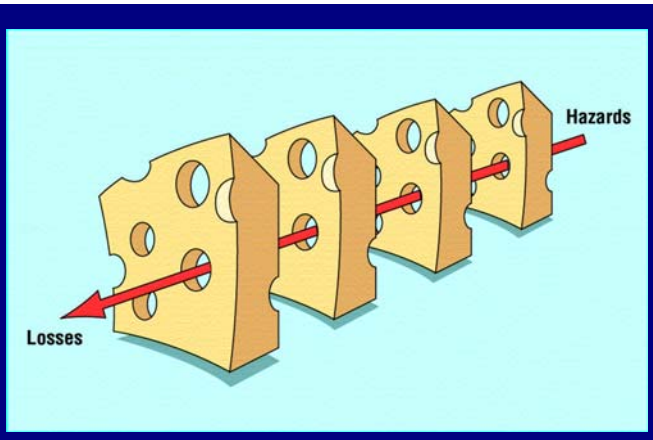
Medication Safety Today



Issue 3 **The Northern Ireland Medicines Governance Project Newsletter** May 2003

TENFOLD MEDICATION INCIDENTS

Tenfold medication incidents are defined as those where the dose was 10 times greater or smaller than the correct dose. These tenfold or decimal point medication incidents are well-recognised risks to patients. They can occur in all areas of medicine practice – prescribing, transcribing, administration and dispensing.

What causes tenfold medication incidents?

- Dose calculations
- Conversion of units of measure for example, changing from micrograms to milligrams
- Misplaced or unclear decimal point during documentation
- Failure to place a 'leading' zero before a decimal point for doses less than one, for example .6mg can easily be interpreted as 6mg
- Use of 'trailing' zeros, for example, 2.0mg can easily be interpreted as 20mg
- Presence of multiple zeros in a dose, for example 150,000 units

Medication risk factors

- A wide dose range when the tenfold medication incident may fall within or close to normal doses
- Use of a new or unfamiliar medicine when the tenfold medication incident may not be immediately recognised
- Medications available as liquids or injections more easily allow the preparation of unusual doses

How to reduce tenfold medication incidents.

- Avoid calculations whenever possible by using standard doses or dose tables.
- Always write down the patient's weight, dose equation used and final dose calculation
- Ensure that dose calculations are checked by a second practitioner
- Avoid unnecessary decimal points when prescribing, for example, 11mg instead of 10.8mg
- Zeros – 'lead' don't 'trail'!!
- Take extra care when doses have multiple zeros
- Report incidents so others can learn.

Drug Calculations

Are you confident?

Miscalculations of drug doses are a common cause of medication incidents. Test your ability on the questions below.

1. A 70kg adult requires enoxaparin 1.5mg/kg for the treatment of DVT. What dose do they require?
2. A 1g dose of phenytoin injection is diluted in 100ml sodium chloride 0.9%. The maximum infusion rate in 50mg/minute. What is the minimum infusion time for this dose?
3. A child requires 150mg of ibuprofen suspension. It is available as 100mg/5ml. What is the dose in millilitres that the child requires?
4. Amiodarone injection is available as a 3ml ampoule containing 50mg/ml. A patient requires 300mg. How many millilitres of amiodarone are required for this dose?
5. How many milligrams of adrenaline/epinephrine are in 10ml adrenaline/epinephrine 1 in 10,000?

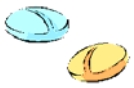
Answers at the bottom of the page.
If you have difficulty with these or other calculations, please let your Medicines Governance Pharmacist know.

Have you visited our website?

www.dhsspsni.gov.uk/pgroups/pharmaceutical opens the web page of the Chief Pharmaceutical Officer, then click on NI Medicines Governance to enter the projects home page.
You can look at background information, Safety Memos and best practice/policies prepared by the project team. There are also back issues of this newsletter and a page of useful links to other web sites related to medication safety (click on MGP links). Use the list of subjects on the right hand side of the screen to navigate the site.

Answers
(1) 105mg (2) 20 minutes (3) 7.5ml (4) 6ml (5) 1mg

Warfarin



Serious medication incidents have occurred with warfarin.

For example, warfarin 5mg has been used when warfarin 0.5mg was intended. This could result in haemorrhage.

A policy to reduce the potential of a warfarin medication incident has been developed. This should increase safety in the use of warfarin.

- **Only warfarin 1mg and 3mg tablets should be used.** Warfarin 5mg and warfarin 0.5mg tablets must be avoided.
- Where clinically possible, warfarin should be prescribed as a whole number, e.g. either 1mg or 2mg, not 1.5mg.
- **The pharmacy department will supply 1mg AND 3mg tablets only.**

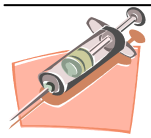
In the future….

It is anticipated that this policy will be adopted by GPs and community pharmacists ensuring that the policy for prescribing and supply of warfarin is the same across Northern Ireland.

Did you know?

Intravenous clarithromycin should be diluted prior to administration.

- Reconstitute each 500mg vial with 10ml water for injection.
- Further dilute this solution with 0.9% sodium chloride or 5% glucose to produce a final concentration of 2mg/ml.
- **In other words, 500mg clarithromycin should be infused in 250ml of fluid over 60 minutes.**



Tuberculin PPD for Mantoux Testing

The licensed preparation of Tuberculin PPD (100 units per ml) is currently unavailable from Evans Vaccines.
An alternative unlicensed product is available from SSI in Denmark.

*** CAUTION ***

There are significant differences between the SSI product and the previous Evans Vaccines product.
Contact Pharmacy for advice.

Pro re nata?

Did you know that this is Latin for 'when required'? It is commonly shortened to 'prn' when medication is being prescribed. The BNF has been trying to abolish the use of Latin abbreviations to reduce the risk of confusion. It states inside the back cover, that 'directions should preferably be in English, without abbreviation' .
The use of abbreviated phrases can lead to medication incidents. For example bid can mean 'bis in die' (twice daily) or 'biduum' (two days) – quite a difference! Coupled with poor handwriting the risks increase further. Could you confidently translate these examples? (Answers at the bottom of the page.)

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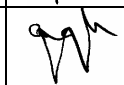
b.	
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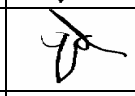
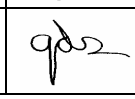
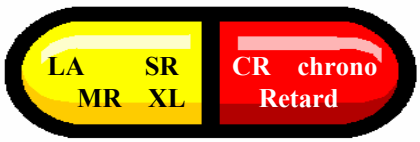
e.	
f.	

To improve medication safety, avoid the use of abbreviations where possible.

Modified Release



All of these abbreviations are used to show a medicine is a modified release preparation. Modified release preparations can be used to reduce the dosing frequency and to reduce fluctuations in drug plasma concentrations. For example,
Nifedipine M/R – Coracten SR® or Adalat Retard® (TWICE daily)
Nifedipine M/R – Coracten XL® or Adalat LA® (ONCE daily)
It is important to use the correct preparation for the prescribed dose and frequency.
Using the ordinary release product when the modified release preparation is prescribed means the patient has a much higher level of drug initially and subtherapeutic levels later on. This may lead to increased side effects when levels are high and less effect when levels are low. Using the wrong modified release product can also cause problems. If you are unsure which preparation to use, check the BNF or contact Pharmacy.

Answers

a.	qh	quaque hora	Every hour
b.	qqh	quaque quarta hora	Every four hours
c.	qid	quarter in die	Four times daily
d.	ql	quantum libet	As much as you like
e.	qd	quarter in die	Four times a day
f.	qds	quarter die sumendus	Four times a day