Medication Safety Today

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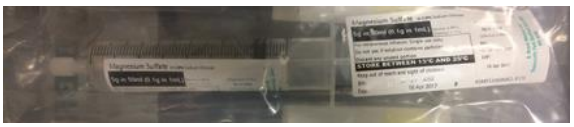
Intravenous magnesium

Following a Serious Adverse Incident (SAI) involving IV magnesium sulfate, a learning letter was issued by HSCB/PHA (LL/SAI/2013/023 (AS). This highlighted regional work to make pre-prepared IV magnesium sulfate infusions available. It recommended that when pre-prepared infusions become available, all other magnesium sulfate injections should be removed from ward stock and replaced with the pre-prepared products.

The first of these pre-prepared products is now available in all trusts, magnesium sulfate 5g in 50ml sodium chloride 0.9% pre-filled syringe for intravenous infusion. There are 5 syringes in each outer bag and each syringe is individually wrapped within the outer bag. The product is stored at room temperature and has an expiry of 60 days from the date of manufacture.



Other pre-prepared products are in development and until then magnesium sulfate ampoules will remain available. However where this pre-prepared syringe is suitable for use, it should be used in preference to preparing an infusion using ampoules.

Calculations

1. Ketamine 15mg has been prescribed. How many ml of ketamine 50mg/5ml oral liquid is required?
2. Gentamicin 5mg/kg is required for a 52kg patient. What is the prescribed dose?
   Gentamicin is available as 80mg in 2ml vials. How many mls of gentamicin are required for this dose?
3. How many grams of calcium gluconate in 10ml of calcium gluconate 10%?

Answers overleaf

Checkmate

Double checking is an important strategy in the prevention of medication errors, especially in vulnerable patient populations (e.g. neonatal, paediatrics) and when using certain high-risk medications.

The effectiveness of the double check however lies in it being an independent cognitive task and not merely a superficial routine task. This reduces the risk of bias that occurs when the person preparing is the same person who checks the medication and they are likely to see what they expect to see rather than what is actually there, even if an error has occurred.

The independent double check requires two individuals to separately check each component of the work process, and not to influence any aspect of the check for the second checker. For example, it would be ineffective to hold up a syringe and say “This is 10 units of Actrapid insulin, can you check it?” It is much safer to say “Can you check this for me?”

For a thorough Second Check, the following should be included as part of the overall second check:

- Patient identity
- Allergy status of patient
- The prescription
- The preparation of the medication
- Use of any medical devices (e.g. the rate setting on pumps/syringe drivers)

Refer to Trust Medicines Code’s for further details on the Second Check process in your Trust and for when to use it.

If you have any comments on this newsletter, please contact Sharon O’Donnell, Medicines Governance pharmacist on 02890638129 at Royal Hospitals or by e-mail at sharon.odonnell@belfasttrust.hscni.net.
Further copies of this newsletter can be viewed at www.medicinesgovernanceteam.hscni.net or on your Trust intranet.

Penicillin allergy

Medication incidents continue to be reported where patients are prescribed and administered a medication that they have a documented allergy to. The most common cases involve penicillin allergies. These have the potential to cause serious harm to patients if they have a true anaphylactic reaction.

Allergy status should be documented on the kardex on admission. This should include:

- the medicine/allergen,
- the type of reaction
- be signed and dated by the recorder.

No medication should be prescribed or administered until the allergy section is completed in full (except in an emergency situation)

Patients with severe or life threatening allergies should be highlighted at each ward handover and mentioned as part of the safety brief.

The following table gives guidance on which medications should be avoided, those that should be used with caution, and those that can be safely prescribed and administered in patients with a documented penicillin allergy.

DO NOT USE Contraindicated	CAUTION Seek advice from microbiology for patients with anaphylaxis	SAFE
Amoxicillin	Cefalexin	Amikacin
Benzylpenicillin	Cefotaxime	Ciprofloxacin
Co-amoxiclav (Augmentin®)	Ceftazidime	Clarithromycin
Co-fluampicil (Magnapen®)	Ceftriaxone	Doxycycline
Flucloxacillin	Cefuroxime	Gentamicin
Phenoxymethylpenicillin (Penicillin V)	Ertapenem	Metronidazole
Piperacillin/Tazobactam (Tazocin®)	Imipenem	Nitrofurantoin
Ticarcillin/clavalonic acid (Timentin®)	Meropenem	Teicoplanin
		Trimethoprim
		Vancomycin

This table is not exhaustive and contains those medications most commonly used. If in doubt always check, especially with combination medication for individual constituents.

On balance

Lithium is used to treat bipolar disorder and resistant depression. It has a narrow therapeutic index meaning slight increases or decreases in serum levels outside therapeutic levels can cause serious patient harm.

Lithium is excreted via the kidneys and because of this, lithium toxicity can be precipitated by even small decreases in kidney function, dehydration or fluid loss via vomiting or diarrhoea. Dehydration leads to decreased kidney function as the kidneys try to conserve water, which in turn leads to decreased lithium excretion that then causes an increase in blood lithium levels (level > 1.5mmol/L is toxic).

If a patient on lithium is admitted to hospital, irrespective of reason for admission, it is important to check their lithium level to ensure it is within therapeutic range. Sodium depletion can increase the risk of lithium toxicity, so consideration should also be given to any history of dehydration prior to admission and renal function should be checked.

Valproate

MHRA

Valproate, also known as valproic acid (brand names include Epilim® and Depakote®) is an effective medication used to treat epilepsy and bipolar disorder.

Unborn babies exposed to valproate are at very high risk of neurodevelopment disability and other birth defects. In girls and women of childbearing potential, valproate should be initiated and supervised by a specialist and only when other medications have not been tolerated or have been found to be ineffective.

The MHRA has updated its **Valproate Toolkit**, providing a range of resources to support providers, staff and patients in the safe use of valproate.

The DoH in Northern Ireland has also issued a Patient Safety Alert that requires trusts to take action to ensure that all girls and women of or near childbearing age taking valproate are systematically identified and that these resources can be used to plan their care. The alert and complete list of actions are available at the following link Link

Find out what is happening in your trust in response to the alert.

Answers

1. 1.5ml
2. 260mg and 6.5ml
3. 1g