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Ballarat Health Services

Medication Safety Newsletter

Updated Gentamicin Drug Guideline

In recent months there have been a number of reported incidents that involved inappropriate dosing of gentamicin. Three recent incidents involved ordering of multiple doses within a 24 hour period leading to excessive doses being received by patients. Excessive doses can lead to multiple complications, including kidney failure and hearing problems, which may not always be reversible. For all indications (except endocarditis) gentamicin should only be prescribed as a daily dose or less frequently in those with renal impairment. Refer to the table below for dosing information.

An updated Gentamicin Drug Guideline [DRG0006] was released in August 2015 and serves as an important reminder for staff regarding the appropriate use of this antimicrobial.
Significant changes to the Gentamicin Guideline include:

- Altered dosing for non-critically ill patients (dosing in patients with severe sepsis or septic shock remains at 7mg/kg). See the table below for dosing information. Dosing by age has been removed.
- Dosing according to IDEAL body weight in obese patients. If a patient's actual body weight is less than their ideal body weight, then actual body weight should be used.
- A flowchart to assist in deciding on an appropriate starting dose, and to help guide when gentamicin therapeutic drug monitoring should occur.

All staff prescribing, administering or checking a gentamicin order should review other medication order forms, including the "stat dose" section of the medication chart, Emergency Department Record or Anaesthetic chart, to determine if and when previous doses have been administered. The dose timing must be calculated taking into account any previous doses.

Creatinine clearance (mL/min)	Gentamicin Dose	Dosing interval	Maximum number of empirical doses
Severe sepsis or **septic shock**	7mg/kg	ONE dose only. Subsequent dose and interval based on renal function (see below)	
Greater than 60 mL/min	4-5mg/kg	24 hours	3 (at 0, 24 and 48 hours)
40 to 60 mL/min	4-5mg/kg	36 hours	2 (at 0 and 36 hours)
Less than 40 mL/min	4mg/kg	Reconsider need. Give initial dose once, then seek expert advice	
Streptococcal and Enterococcal endocarditis	1 mg/kg ***8 hourly***	N/A	

Gentamicin Dosing:
Contact your clinical pharmacist or the Antimicrobial Stewardship Pharmacist for any queries regarding gentamicin dosing. DRG0006 Gentamicin (sulfate) is also available through the Gov. Doc. system for guidance.

Gentamicin is also an restricted antibiotic under the Antibiotic Policy (POL0083). The first 48 hours of therapy must be endorsed by a Registrar or Consultant (with this doctor's name included with the order) and must be prescribed in accordance with the Therapeutic Guidelines: Antibiotic. Use beyond 48 hours must be approved by a microbiologist or an ID physician.

Oxycontin (oxycodone slow release tablets) Reformulation

Oxycontin has been reformulated to have a crush proof coating to discourage misuse and abuse of this medication. The company has confirmed that the new formulation (which is stocked at BHS) no longer releases 40% of the drug in the first hour. As the new formulation has a more steady release of the medication, breakthrough doses (i.e. immediate release oxycodone –*Endone*) can be given at any time required. This is regardless of when the last *Oxycontin* dose was administered. Contact your pharmacist or the Acute Pain Service (APS) team if you have any questions.

Paracetamol Toxicity

CPP0129 **Paracetamol Poisoning** includes information regarding the most common treatment for paracetamol toxicity– N-acetylcysteine (NAC). N-acetylcysteine is an important life saving medication and it is essential that no doses are withheld or delayed. For this reason, N-acetylcysteine is available in the Emergency Cupboard for supply out of hours. If the Emergency Cupboard stock has been depleted overnight, please place an urgent requestion to replace it. If treatment is required after hours, and no stock is available, contact the on call pharmacist. A three stage N– acetylcysteine infusion schedule is required.

N– acetylcysteine Dosing Schedule
Initial: 150mg/kg diluted in 200ml dextrose over 15 minutes
Second: 50mg/kg diluted in 500ml dextrose over 4 hours
Third: 100mg/kg diluted in 1000ml dextrose over 16 hours

All three infusions should be prescribed on the intravenous orders form at the same time to ensure no delays in treatment or omitted infusions.
Nursing staff should double check that all three infusions have been prescribed appropriately as above and source sufficient stock for the full treatment course.

Discharge Summaries and Discharge Medications

Patients discharged from hospital must have a discharge summary completed by the treating team. The discharge summary must include a full list of discharge medications and reasons for any changes. Local GPs have highlighted how crucial this information is for continuity of care.
An audit conducted in April 2015 showed that only 52% of discharge summaries contained a full list of discharge medications and 60% highlighted changes made to medications. BossNet discharge prescribing will make this process more streamlined in the future.
Always ensure a full list of discharge medications and reasons for change are included in the patient's discharge summary.

Ferric Carboxymaltose

Ferric carboxymaltose (*Ferinject*) is a new form of intravenous iron that is now available at BHS. It is restricted to PBS eligible day patients in ambulatory care (Medical Day Unit and Chemotherapy Day unit), and inpatients with a documented severe reaction to other intravenous iron formulations. It can be administered quickly (e.g. 16 minutes), but has a maximum dose of 1000mg per infusion. It is significantly more expensive than iron polymaltose (*Ferrum H*), the traditional form of iron for intravenous infusions.
Iron polymaltose will continue to be available. Refer to DRG0049 Ferric (iron) Carboxymaltose (intravenous infusion) for more information.

Varenicline– Addition to Formulary

Varenicline (*Champix)* is a medication which blocks nicotine binding to its receptors, preventing the pleasurable effects from smoking. It is also a partial agonist which aids in reduction of nicotine withdrawal symptoms. It is used in patients with nicotine dependence to assist them to quit smoking. It is now available for use at BHS for patients who meet the following PBS criteria:

- Aid in achieving abstinence from smoking
- AND treatment must be the sole PBS-subsidised therapy for this condition
- AND patient must have indicated they are ready to cease smoking
- AND patient must be undergoing concurrent counselling for smoking cessation through a comprehensive support and counselling program (i.e. QUITline). This must be documented in the medical records.

It is another option for patients who express a desire to quit, particularly those who are committed to smoking cessation post discharge. It can take a week for the patient to see benefit from this medication.
MR/941.2 Management Plan Smoking Status is now available to identify smokers, and to aid in nicotine replacement therapy prescribing.

Patient's Own Medications

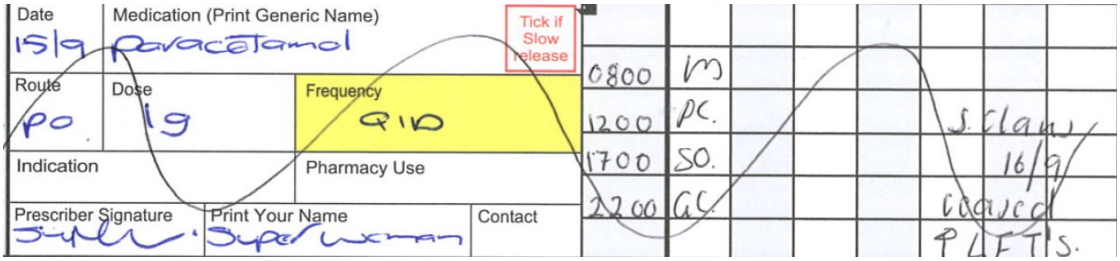
Current BHS policy states that Patient's Own Medication use is encouraged (with patient consent) whilst a patient is in hospital. The use of Patient's Own Medications allows patients to receive consistent brands, preventing confusion. The usual checks of storage, correct strength and expiry are still required. A Riskman report highlighted an incident where the patient's own insulin was used, but it was significantly past its expiry date. **Before administering any medication always check the expiry date.**

Ceasing a medication order

When ceasing an order always:

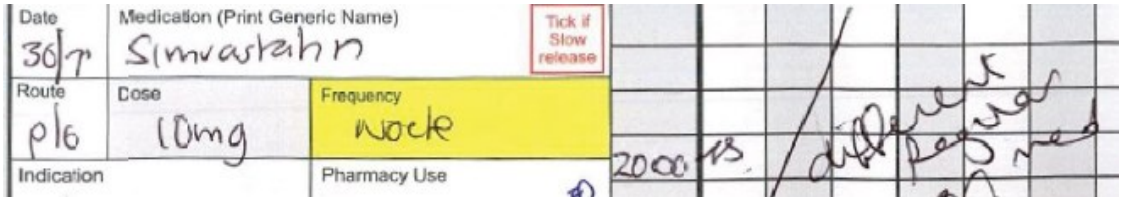
- Draw a line through the order in both the administration and prescription order sections
- Document signature and date
- Write “CEASE”
- A reason for cessation of the medication should be included

Example:



If the intention to cease an order is not clear, a ceased order may unintentionally be continued to be administered.

Example:



In the situation above, the patient had simvastatin ceased, with pravastatin commenced. When a new medication chart (NIMC) was rewritten, it was unclear that the simvastatin was ceased. Both medications were rewritten, and thus administered. In this example, a line should have been placed through the prescribing section to prevent this error.

When a medication order is to be changed, the original order must be ceased and a new order written. Refer to CPP0286 Medication Orders for more information.

Risperidone Update

In August the Therapeutic Goods Administration (TGA) released an alert regarding the risk of cerebrovascular adverse events in dementia patients treated with risperidone.

Additional research highlighted an increased risk of cerebrovascular adverse events for patients being treated with risperidone for behavioural symptoms relating to **vascular or mixed dementia**, compared with those prescribed it for behavioural symptoms relating to **Alzheimer’s dementia**. The odds ratio for any cerebrovascular adverse event in patients with vascular or mixed dementia taking risperidone was 5.26 (95% CI 1.18-48.11). The comparative odds ratio for Alzheimer’s dementia patients was 2.23 (95% CI 0.85-6.88). The TGA has received 17 case reports linking risperidone to cerebrovascular events.

Following this update, the indication for risperidone use in patients with vascular or mixed dementia has been removed. Use in Alzheimer's dementia has been updated to include a maximum duration of 12 weeks.

The PBS indication is expected to be updated and removed. Patients with vascular or mixed dementia receiving risperidone should be reviewed and considered for cessation or switching to another agent (ideally prior to the indication being removed from the PBS).

The use of risperidone to treat patients with behavioural symptoms associated with Alzheimer's dementia should be based on each patient’s individual circumstances, with risks considered in relation to the benefits.

Heparin

When a heparin infusion is ceased, it must be verbally communicated to nursing staff, and where possible it should be documented in the progress notes. This ensures that the infusion is stopped as intended. On MR/700.3 Heparin Intravenous Infusion the remaining lines should be crossed out and endorsed "ceased" with the doctor's signature, time and date.
DRG0038 Heparin has also been updated to include information regarding switching from Heparin to Low Molecular Weight Heparins and vice versa, as shown below.

	Changing from ↓ / Changing to →	Treatment: Heparin IV	Treatment: Dalteparin or enoxaparin subcutaneous
Treatment	Heparin IV		Start when heparin infusion is ceased[1]
Treatment	Dalteparin or enoxaparin subcutaneous	Start when next dose is due (minimum 10 hours) without bolus	
Prophylaxis	Heparin Subcutaneous	As soon as diagnosis made	As soon as diagnosis is made
Prophylaxis	Dalteparin or enoxaparin subcutaneous	As soon as diagnosis is made	Seek Specialist advice[2]

1. **Dose adjustment may be needed if APTT is above therapeutic range. Seek specialist advice**
2. **Dose adjustment may be needed depending on when last dose of prophylactic LMWH was administered**

Adverse Drug Reaction (ADR) Advice Letter

An Adverse Drug Reaction (ADR) Advice Letter is now available for completion by medical staff or pharmacists via an e-form on Bossnet. It will be visible on future admissions through the alerts folder in the patient's Electronic Medical Record on Bossnet.
If a patient experiences a new **significant drug reaction (in particular drug allergies)** whilst in hospital or their admission is the result of a new **significant drug reaction (in particular drug allergies)** the patient must receive a copy of the completed ADR Advice Letter. A copy must also be forwarded to the patient's GP via fax or mail.
Access to the form is available by selecting the corresponding patient in Bossnet (single click). Hover the mouse over the EMR tab and select "other e-forms" from the drop down selection.
Where a pharmacist completes the form, the pharmacist must verbally confirm with the treating medical officer (Registrar or higher) that the reaction is most likely due to the suspected drug and significant enough to advise the patient. This will be documented in the patient's progress notes and on the ADR advice letter.

Example Alert

ADVERSE DRUG REACTION ALERT

Drug: Testing Drug
Reaction:
Reaction one
testing
Date of reaction: 29/09/2015
Likelihood of drug involvement: ☐ unlikely ☐ possible ☐ probable ☒ definite
Recommendations:
recommendations
recomnd
☒ This has been discussed with medical staff Dr test doctor.

Glyceryl Trinitrate (*Anginine*)

A Riskman report highlighted a incident where a patient was not charted for glyceryl trinitrate "as required" leading to a delay in chest pain treatment.
When admitting a patient, consider if a "prn" order of sublingual glyceryl trinitrate needs to be prescribed on the NIMC. This is likely to be required if the patient uses "prn" sublingual glyceryl trinitrate at home or if they are admitted with a cardiac related event. When the patient is discharged, always include "prn" sublingual glyceryl trinitrate on their discharge prescription.