

Welcome to the second issue of PostScript Acute. The following hot topics are included:

- New acute medicine prescription form ('Kardex')
- Inhalers – what's new?
- Drug interactions – focus on clarithromycin
- Guideline News

Information included is specific to the use of medicines in the adult setting.

1. Acute Medicine Prescription Form ('Kardex')

Following multidisciplinary review and consultation, changes were agreed to the acute in-patient Medicine Prescription Form ('Kardex'). The changes are designed to support improvements in clinical practice and reduce the potential for medication incidents and patient harm. These changes will only make an impact if the form is completed properly, so accompanying guidance notes have been produced to encourage accurate completion. The main changes from the old form are:

- The patient's name, CHI number and drug allergy/sensitivity details are recorded once along the bottom of the form. This information is now visible regardless of which page of the form is open.
- The prescriber is now prompted to print their name and their signature. This is to address ongoing problems with identifying prescribers from their signature alone.
- NHSGGC is committed to a programme of improved medicines reconciliation, which is the process of obtaining and maintaining an accurate list of patient's medicines from admission to discharge. On admission to hospital, a list of the patient's current medication should be documented with a clear indication of whether each medicine should be continued, stopped, withheld or changed. A standard medicines reconciliation pro-forma is being introduced into admission documents to facilitate this. There is a box in the new Medicine Prescription Form to record whether this has been completed for a patient.
- Each prescription entry now has a section on the left hand side to record if a medicine was being taken prior to admission, is a new dose of a previously taken medicine or a new medicine. The appropriate box should be ticked for each medicine added. This information is essential for completing the discharge prescription, where there is a need to highlight new medicines and changes to the patient's GP.

- A new thromboprophylaxis assessment box has been added to the top of the parenteral drugs section. This new box prompts regular assessment and documentation of a patient's risk and their requirement for drug thromboprophylaxis and antiembolism stockings.
- The changes do not currently apply to the Critical Care and Day Care Medicine Prescription forms, which will be updated in due course.

2. Inhalers – What's New?

This article covers the supply and prescribing of inhalers across NHSGGC Acute, the new generic salbutamol inhaler on contract and a recent drug safety update on tiotropium.

Supply and Prescribing across NHSGGC Acute

Within NHSGGC Acute approximately £1.7M was spent in the Acute sector on inhalers last year alone (equating to 2% of the total drug spend) and these costs are increasing.

Inhaler Wastage Project

A lot of inhaler wastage occurs and most is preventable. A study performed at one NHSGGC hospital site over a one month period estimated £1300 of waste on inhalers. Extrapolation of this cost over one year across NHSGGC (assuming 25-50% of the wastage is preventable) estimates a saving of £37-75,000 per year could be achieved across NHSGGC Acute.

Audit of Inhaler Prescribing

An audit was recently performed to review inhaler prescribing before and after the implementation of a 'quick reference guide' on three different wards. This guide was used as a visual aid for nursing and medical staff to identify inhaler devices and provide dosage advice. Pre-implementation, 31% of assessed inhalers (n=122) were prescribed appropriately and this increased to 72% post-implementation (n=108).

Educational Package

In response to the audit results, an educational package has been produced for nursing staff (endorsed by the NHSGGC Respiratory MCN) with the aim of reducing wastage and ensuring safe and cost effective prescribing whilst maintaining continuity of patient care. The educational package consists of a booklet entitled 'Respiratory Inhalers – Good Practice Guide' and a presentation for nursing staff.

2. Inhalers – What's New? (continued)

The package will initially be piloted in medical receiving units, respiratory and RAD wards. If shown to be effective, funding will be pursued for roll out across NHSGGC Acute.

New Salbutamol Inhaler Contract- Implications for patients using Volumatics®

- Ventolin Evohalers® are no longer on contract within NHS Scotland
- A generic salbutamol 100microgram metered dose inhaler manufactured by Sandoz is routinely being purchased.
- Patients who require salbutamol via a spacer device will still require the branded Ventolin Evohaler® as the generic Sandoz salbutamol inhaler is not compatible with a Volumatic®. The requirement for a Ventolin Evohaler® should be specified when ordering.

MHRA Drug Safety Update – Tiotropium

The November issue of the MHRA Drug Safety Update bulletin discusses the safety of the Spiriva Respimat® preparation of tiotropium. Recent analyses found that Spiriva Respimat® was associated with a non-significant increase in all-cause mortality compared with placebo. In a posthoc analysis of different patient subgroups, a significant excess in mortality was observed in patients with known cardiac rhythm disorders. By contrast, the Spiriva Handihaler® preparation of tiotropium was associated with a decrease in all-cause mortality compared with placebo. The underlying reasons for the apparent difference are unclear, and may be a chance finding; further studies are ongoing.

The prescribing of Spiriva Respimat® is restricted within NHSGGC to patients with poor manual dexterity who have difficulty using the Handihaler® device. However, for anyone prescribed a Spiriva Respimat®, please use with caution if they have known cardiac rhythm disorders and do not exceed the recommended dose.

3. Drug Interactions – focus on clarithromycin

Why focus on clarithromycin?

This article focuses on clarithromycin as an example of a drug which interacts due to inhibition of the cytochrome P450 enzyme system ('enzyme inhibitor'). Clarithromycin interactions were highlighted previously in an NHSGGC Risk Awareness Notice following a significant clinical incident. Subsequently, an NHSGGC audit of clarithromycin prescribing in 97 patients found that over a 10 day period, 43 significant interactions were identified; 67% of these involved co-prescription of a medicine contra-indicated in those taking clarithromycin. Clarithromycin is the macrolide antibiotic of choice within NHSGGC Acute Infection Management Guidelines for indications such as lower respiratory tract infections and pneumonia. It is therefore important that healthcare professionals across NHSGGC are aware of the need to consider all interactions.

Drug Interactions - Cytochrome P450 Enzyme System

Two or more drugs given at the same time may exert their effects independently or may interact. Some drug interactions are extremely harmful and can be life-threatening. A number of drug interactions are predictable and are manageable or preventable. Medicines that are often associated with adverse effects are those that induce or inhibit the cytochrome P450 enzyme system within the liver.

Cytochrome P450 inducers ('enzyme inducers') - Medicines that induce this hepatic microsomal enzyme system can gradually increase the rate of metabolism of other drugs metabolised by the same system. This results in lower plasma concentrations – and so reduced effect - of the other drug. Conversely, on withdrawal of the inducer, plasma concentrations increase and toxicity may occur.

Examples: barbiturates (phenobarbital) phenytoin, rifampicin.

An audit of clarithromycin prescribing within NHSGGC identified co-prescribing of medicines contra-indicated in those taking clarithromycin

3. Drug Interactions – focus on clarithromycin (continued)

Cytochrome P450 inhibitors ('enzyme inhibitors') - Medicines that inhibit this hepatic enzyme system can decrease the metabolism of other drugs metabolised by the same system. Higher plasma concentrations of the other drug result, causing a rapid increase in effect with risk of toxicity.

Examples: macrolide antibiotics (clarithromycin, erythromycin), triazole antifungals (fluconazole, itraconazole, voriconazole, ketoconazole), diltiazem, verapamil.

Clarithromycin - Cytochrome P450 enzyme inhibitor with additional cautions

In addition to being an 'enzyme inhibitor', clarithromycin has also been associated with prolongation of the QT interval which can lead to cardiac arrhythmias. Patients who are prescribed other drugs which have this side effect are at increased risk when they also take clarithromycin. The risk may be further increased if the concentrations of these drugs are increased through inhibition of their metabolism by clarithromycin as described above.

Clarithromycin should also be used with caution in patients with a history of ventricular arrhythmias, severe cardiac insufficiency, uncorrected hypokalaemia or hypomagnesaemia or bradycardia (<50 bpm). Clarithromycin should not be used in patients with congenital or documented acquired QT prolongation.

Examples of Significant Clarithromycin Interactions

Clarithromycin is associated with **lots** of interactions. Many of these are clinically significant and if the combination is contra-indicated **do not** co-prescribe. It is extremely important to always check for interactions with **all** existing therapy when clarithromycin is being considered. It is not possible to list all interactions within this article and the recommended sources to check for interactions are listed below. Examples of drugs that should be avoided with clarithromycin include; artemether/lumefantrine (Riamet®), colchicine (if concomitant use in hepatic or renal impairment), disopyramide, dronedarone, droperidol, eletriptan, eplerenone, ergotamine, everolimus, ivabradine, methysergide, mizolastine, nilotinib, pimozide, ranolazine, reboxetine, simvastatin and sirolimus

NB. These are only examples, it is extremely important to **always check for interactions with all existing therapy when clarithromycin is started.**

Sources to Check for Drug Interactions

Appendix 1 of current edition BNF or access via <http://bnf.org>.

The Summary of Product Characteristics (SPC) of medicines. Access via <http://www.medicines.org.uk/emc/>.

Clinical pharmacists, NHSGGC Medicines Information Service, Antimicrobial Pharmacists.

Take Home Messages

- It is essential that healthcare professionals take responsibility for identifying and acting on drug interactions to minimise the risk to patients.
- Clarithromycin should only be prescribed where clinically necessary and the NHSGGC Acute Infection Management Guidelines should be followed.
- Always check for interactions with all existing therapy when clarithromycin is started. If the combination is contra-indicated do not co-prescribe.
- If there is an interaction, decide on a management plan and document the details of the interaction in the patient's medical notes.
- Ensure the plan is documented, followed and communicated to other members of the multidisciplinary healthcare team including GPs where appropriate.
- The above principles are relevant when dealing with any drug interaction.
- Interactions must be considered when prescribing any new medicine
- If unsure how to manage an interaction or of the potential significance of an interaction, contact pharmacy for advice. If you need advice on an alternative antibiotic contact pharmacy, microbiology or an ID physician.

Clarithromycin is associated with a number of clinically significant interactions. Always check for interactions before any new medicine is prescribed.

4. Guideline News

SIGN, NICE and local NHSGGC guidelines produced in the last 6 months (to Oct 10) which may be of interest to healthcare professionals in Acute care are highlighted in this section.

SIGN Guideline Title	Guideline Number	Date
Management of patients with stroke: Rehabilitation, prevention and management of complications, and discharge planning	118	June 2010
Management of patients with stroke: identification and management of dysphagia	119	June 2010
Management of chronic venous leg ulcers	120	August 2010
Diagnosis and management of psoriasis and psoriatic arthritis in adults	121	October 2010
Prevention and management of venous thromboembolism	122	December 2010

NICE Guideline Title	Guideline Number	Date
Lower urinary tract symptoms	97	May 2010
Chronic obstructive pulmonary disease (update)	101	June 2010
Bacterial meningitis and meningococcal septicaemia	102	June 2010
Alcohol-use disorders: physical complications	100	June 2010
Motorneurone disease – non-invasive ventilation	105	July 2010
Metastatic malignant disease of unknown primary origin	104	July 2010
Delirium: diagnosis, prevention and management	103	July 2010
Transient loss of consciousness in adults and young people	109	August 2010
Chronic heart failure	108	August 2010
Hypertension in pregnancy	107	August 2010
Barrett's oesophagus – ablative therapy	106	August 2010
Pregnancy and complex social factors	110	September 2010

NHSGGC Acute Care

Local NHSGGC guidelines are available on StaffNet via the Clinical Info button



Oral PPI guidelines for discharge from S&A directorate

Proton pump inhibitors are one of the most common type of medicines prescribed. It is recognised that during hospital admission patients are often started on a PPI, or changed to a higher dose, for acute treatment of presenting complaints. This is often required for a short treatment course.

Recent audit work has shown that information on indication or length of treatment in discharge prescriptions is incomplete in around two-thirds of all patients started on a PPI during hospital admission, or changed to a different dose.

In order to provide information to pharmacists, junior doctors and other prescribers on the appropriate continuation of PPI treatment after discharge from surgical units, the Pharmacy Clinical Effectiveness team in collaboration with General Surgery have issued advice. This includes prescribing advice on the most common indications for continuing an oral PPI after discharge from hospital surgical units, including licensed and off-licence indications. This is available on Staffnet/Clinical Info.

Further guidance is currently under development within the EC&MS / RAD Directorate.

NHSGGC Palliative Care Guidelines

Palliative Care Guidelines Pocket edition 2010 will be distributed to ward areas. These pocket guidelines reflect a consensus of opinion about good practice in the management of adults with a life limiting illness. Please contact your local Palliative Care team to obtain extra copies.



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