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# Are Practitioners Using the Opioid Treatment Plan and Contract? An Audit to Assess Adherence to the Policy

Akwasi Mintah

## **FOCAL POINTS:**

- How compliant are prescribers in using the opioid contract for management of chronic non-malignant pain?
- Results showed the non-compliance and awareness of the opioid contract
- There is the need to raise the awareness of the opioid contract

## **INTRODUCTION:**

Local Health Board policy on opioid states that all patients initiated on strong opioids for non-malignant pain should have an opioid plan and contract. This is to support safe prescribing and help prevent the development of problem drug use. This audit was to assess the adherence to this policy, and measures needed to increase awareness and adherence.

## **OBJECTIVE:**

Assess the use of the opioid contract and treatment plan within a GP surgery in North Wales in patients started opioids for non-malignant pain in the past year.

## **METHOD:**

A search of patients started on strong opioids in the past year was done on the GP practice prescribing computer system (EMIS). The inclusion criteria used were based on the opioid contract guidance of the health board. They were

- Patients should be taking morphine 10mg BD or equivalent dose of fentanyl or oxycodone
- Indication should be non-malignant pain
- Prescription type should be a repeat.

The search was completed in January 2017, and each record was checked to see if an opioid contract and treatment plan was in place. The audit standard was that all selected patients should have an opioid contract and treatment plan (100%). Ethics committee approval was not needed for the audit.

## **RESULTS:**

Five patients were identified who had been initiated opioids for non-malignant pain in the past year. Three were initiated in primary care and two in secondary care. No treatment plan and opioid contract were found in any of the patients' record. (0%). Although no patient had treatment plan documented in their notes, 60% had break through pain prescribed, and 40% had laxatives prescribed as suggested in the policy.

## **CONCLUSION:**

Discussion was initiated with the GPs in the practice. Appointments were made with four of the patients for review. The treatment plan and contract was then added to the practice prescribing computer system, and to pop up as a reminder whenever a patient is started on opioid. The lead pharmacist (surgery) in the secondary care was made aware of the audit result, and the need to promote the contract within the team. GPs will now use opioid treatment plan for all newly started patients.

# Is the Health Board Prescribing Subcutaneous Insulin Safely for Diabetic Inpatients?

Alex Bamsey

## FOCAL POINTS:

- 15% of inpatient beds are occupied by diabetic patients at any one time in the NHS
- Following the MHRA 2015 safety alert regarding new high strength insulin products and medication safety alert produced by the Medication Safety Group (MSA 009) of ABMU it was deemed as necessary to assess the quality of insulin prescribing within this health board
- 89% of inpatient charts were completed correctly in terms of endorsing insulin on the inside and ticking insulin chart on the outside.
- 100% of patients had their insulin administered when expected and medicines reconciliation was completed within 24 hours
- Only 22% of inpatient charts had the strength of insulin endorsed which goes against the prescribing standards set out by the health board

## INTRODUCTION:

Following on from the MHRA safety alert in 2015 surrounding high strength insulin and the Medication Safety Alert (MSA 009) regarding insulin prescribing standards, it was deemed as essential that the quality and accuracy of insulin prescribing be assessed in relation to the two aforementioned alerts.

## METHODS:

The inclusion criteria for subjects to be included in the audit were adult inpatients that had diabetes mellitus, admitted for non diabetic reasons and were prescribed subcutaneous insulin prior to admission.

Patients were identified as receiving insulin either using the Freestyle Database or asking members of ward staff. The health board clinical portal was used to obtain patient details such as current ward and time of admission. Once on the ward, staff explained the purpose of the audit and patient's medical notes were accessed for the relevant information. Drug charts were used to record information on the data collection sheet, and the data was interpreted as to whether standards were or were not met.

Ethic committee approval was not required for the audit.

## RESULTS:

Four standards were identified in the audit:

Standard 1: Correct endorsement of medicine chart (ticked front of chart and endorsed insulin on inside of chart). 89% (N=9) of inpatient charts met this standard.

Standard 2: Whether patients received their first dose of insulin as expected; 100% (N=9) of patients received this as expected.

Standard 3: If medicines reconciliation occurred within 24 hours by a pharmacist – 100% (N=9) of patients had this achieved.

Standard 4: If the prescription chart met the set standards in the patient safety alert e.g. prescribing brand name, strength, device and whether the dose in units was specified. Only 22% (N=9) of prescriptions met this standard as the strength was not specified.

## DISCUSSION:

The main issue that was identified during the audit was that only 22% (N=9) of inpatient charts were correctly written as per health board insulin prescribing standards. The reason for this was that the prescriber routinely did not specify the strength of insulin and the pharmacist did not highlight the lack of strength with the prescriber. It may be recommended that staff should receive further information and guidance on the two safety alerts identified in order to maximise patient safety. The strength of insulin should always be written on a prescription regardless if the brand is only available as a single strength.

# Is the Health Board Prescribing Sub-Cutaneous Insulin Safely for our Diabetic In-Patients?

Alex Leyshon

## FOCAL POINTS:

- Following the introduction of high strength insulin we aim to look at the safety of insulin prescriptions across the health board, comparing results between different sites.
- Is insulin being prescribed correctly and are prescriptions in the health board in line with guidelines?
- Do patients receive their first dose at the correct time as an inpatient?
- Is medicines reconciliation being completed within 24 hours of admission?
- Results show pharmacist additions to prescriptions make a big difference to safety and adherence to standards, with strength missing from prescriptions being the main issue.

## INTRODUCTION:

Insulin is a high risk drug and the development of different insulin preparations, including newer high strength insulin, along with varying times of action and similar product names, has undoubtedly increased the risk involved in its use. In 2015 the MHRA released a safety alert highlighting the introduction of new high strength and fixed combination insulin. Following this, both the Welsh Government, and the health board released patient safety alerts to make healthcare professionals aware of these changes, to minimise error. The health board has five specific requirements for all insulin prescriptions and we aim to check that these standards are being adhered to. Additionally, we aim to look at both the quality and timeliness of insulin prescribing on adult inpatient wards, as well as the accuracy of the insulin prescription in comparison to the regime the patient is prescribed at home.

## METHODS:

Insulin dependent diabetic patients were identified by speaking to members of staff on different adult inpatient wards. Patients were excluded if they were admitted with diabetic complications such as diabetic ketoacidosis. Using a standardised data collection form, details from the insulin charts, including whether strength and device were documented were recorded. By using the online clinical portal, medical notes and speaking to patients we were able to identify when a patient's first dose was due as an inpatient and their usual insulin regime.

## RESULTS:

All insulin should be prescribed on the appropriate insulin administration chart on admission to hospital, in addition to being indicated on the front of the All Wales Drug Chart and written up on the main side of the drug chart. In this hospital 44% of prescriptions met all of these standards, compared to 55% for the health board. The reason for charts not adhering was mainly that insulin was not endorsed inside the drug chart. At this site, 73% of patients received their first insulin dose at the expected time (i.e. if they usually inject at teatime, it was given at teatime in hospital). In line with the All Wales Medicines Reconciliation Policy, medicines reconciliation should be completed within 24 hours of admission. This occurred for 85% of patients. After being screened by a pharmacist, 33% of insulin prescriptions were in line with the health board's insulin prescribing policy, compared to a health board average of 49%. The main reason for this was due to strength missing from the chart. Device was commonly added by a pharmacist.

## DISCUSSION:

In terms of prompts and administration for all healthcare professionals, ensuring insulin is indicated on the front of the all Wales drug chart and endorsed inside the chart is a necessity, allowing for better awareness that insulin is prescribed. A patient not receiving insulin doses at the appropriate time or omitting doses is unacceptable.

Adherence to health board insulin prescription standards was low. The majority of the time information such as strength and device for the insulin were added by a pharmacist. This highlights the valuable input that pharmacists have to ensure patient safety. Although additions made by pharmacists increased the number of prescriptions adhering to guidelines, it is vital that staff are educated about the health board standards and that we encourage them to be adhered to, to avoid any incidents with such a high risk drug. No patients were identified as at risk in this audit however the main safety issue addressed was that strength is not being recorded on charts, this is of particular importance considering the newer high strength insulins that are now available.

# An Audit to Assess the Level of Adherence to the Gentamicin Treatment Protocol Within a Large Hospital in Wales

Amy Sheppard

## FOCAL POINTS:

- The aim of the audit was to assess the level of adherence to the extended interval (EI) gentamicin dosing and therapeutic drug monitoring protocol at a large hospital in Wales.
- The majority of first gentamicin doses prescribed (n=35, 70%) did not comply with the protocol, for which the reasons are often not possible to determine (n=15, 43%).
- It is rarely known if gentamicin levels have been taken in compliance with the protocol (n=30, 64%), partly due to the fact that the time the sample is taken is not always recorded.
- Several recommendations for change have been proposed, including a tool to aid at the point of prescribing and ensuring the time the sample is taken is recorded.

## INTRODUCTION:

Gentamicin use in Wales has recently increased and there are recognised issues with lack of adherence to local guidelines and suboptimal use of gentamicin, which can result in nephrotoxicity and ototoxicity. Therefore, the aim of the audit was to assess the level of adherence to the EI gentamicin dosing and therapeutic drug monitoring protocol. The objectives were:

- To determine the proportion of initial, second and third doses of EI gentamicin that complied with the protocol (+/-20mg).
- To determine the proportion of initial serum EI gentamicin levels that was taken within the timeframe specified by the protocol.

## METHODS:

Ethics approval was obtained from the Clinical Audit Department and the audit was piloted before commencing data collection. The prescribing of gentamicin was assessed up to and including the third dose, however patients who received gentamicin for less than three doses were included. To identify eligible patients the researcher encouraged pharmacists to flag up gentamicin patients via email, word-of-mouth and posters around the pharmacy department. The researcher also received a weekly list of patients from the biochemistry department who had gentamicin levels taken. Data was recorded on data collection forms for 50 adult inpatients (>18 years) initiated on EI gentamicin over four consecutive weeks from Wednesday 5th October to Tuesday 1st November 2016. Data was entered onto an Excel spreadsheet.

## RESULTS:

- Only 30% of initial doses prescribed (n=15) complied with the protocol.
- Of the 35 initial doses which did not comply with the protocol, it was impossible to work out why 15 (43%) were prescribed incorrectly.
- Only one of the incorrect initial doses (n=35) was corrected to comply with the protocol and no incorrect doses were corrected after the second dose.
- Of the 47 levels required, it was impossible to tell whether 30 (64%) of these were taken as per protocol. Only one of these levels (2%) was definitely taken in the specified timeframe.

## DISCUSSION:

The level of adherence to the gentamicin treatment protocol in this hospital is poor and could be improved. Gentamicin dosing is complex, which may explain why so many prescribers get it wrong first time and fail to correct the second and third doses.

Recommendations to help prescribers get it right could include:

- A gentamicin calculator on our local antibiotic guide (a 'medical device');
- A gentamicin sheet to attach to the drug chart to guide prescribers through the workings and calculations.

Prescribers should also be encouraged to routinely document a time at which the gentamicin dose should be given. Healthcare professionals who take the blood sample should ensure they document the time they took the sample on the form to allow this information to be reported with the result on the local reporting system.



# A Community Pharmacy Audit on Dispensing and Near Miss Errors “From the eyes of the dispenser”

Anne Williams, Laura Ellis

## FOCAL POINTS:

- This audit aims to reduce the occurrence of near misses in the pharmacy by including the dispenser in the accuracy check.
- For the dispenser to identify near misses and discuss them with their colleagues.
- To identify common themes, factors that could influence near misses and possibly circumstances associated with the error through discussion and feedback.

## INTRODUCTION:

There are many reports published regarding harm caused by medication errors both in primary and secondary care. The research applies to all aspects of medication errors including prescribing and dispensing. The National Patient Safety Agency (NPSA) has worked hard to improve patient safety by issuing guides to help health care professionals and they should be notified by the pharmacy when any incidence occurs. The Royal Pharmaceutical Society have produced near miss logs to help pharmacies record and monitor errors that occur. Statistics show medication errors in community caused 6.5% of all hospital admissions and was responsible for 5,700 preventable deaths every year in England in 2002. The General Pharmaceutical Council have set out clear standards surrounding patient safety. It is vital that patient safety is the priority of all health care professionals. The NPSA safety data indicated that completing near miss logs and reviewing dispensing errors significantly reduce them occurring. Near miss logs are normally completed by the pharmacist or ACT and errors fed back to dispensers. Research has shown that passive learning is not as effective as participatory teaching methods.

## METHODS:

Four dispensers participated, three were excluded from the study as two are currently undertaking an accuracy checking course and the other is still a trainee dispenser. All staff read the standard operating procedures on the dispensing process and received the same brief training on how an accuracy check is conducted. Over a period of a week each dispenser had 60 items they had dispensed checked by another dispenser. This was completed for all four dispensers. A total of 240 items were checked over the week. Each dispenser had a standardised form to complete; this included a prompt for discussion with the dispenser who made an error to identify a cause and any contributing factors. After the first week each dispenser filled in a two part questionnaire; part one used a likert-type method and part two consisted of open questions to try and obtain a more extensive understanding of their experience. The forms and questionnaires were thematically analysed. Once the feedback was given and changes implemented, the study was repeated.

## RESULTS:

The results were positive. A total of 7 near misses occurred out of the 240 items dispensed (2.92%) in week one; 43% of these errors were wrong form given. 100% of the participants strongly agreed that the audit was useful and their dispensing skills improved as result. The dispensers that had the most number of dispensing errors would change their dispensing habits as a result of feedback from colleagues. After feedback was given and changes to the dispensary were made, the audit was repeated. The number of near misses reduced to 1.25%; Two dispensers made no errors at all. Similar drug names, packaging and an unusual form were identified as possible causes of near miss errors. Distractions from telephone interruption and assisting shop staff were the key themes identified in circumstances associated with the error.

## DISCUSSION:

It is clear that dispensing errors can cause serious harm and work needs to be done in reducing this. The audit showed that 'participating teaching methods' have proved successful in training dispensing staff on good dispensing practice. This could potentially reduce the occurrence in errors. Although the results from this audit were positive there were many limitations.

## REFERENCES:

1. Pirmohamed M, et al. Adverse drug reactions as cause of admission to hospital: prospective analysis of 18,820 patients. *British Medical Journal* 2004; 329: 15-19
2. GPhC. Standards of conduct, ethics and performance. 2014. [www.pharmacyregulation.org/sites/default/files/standards\\_of\\_conduct\\_ethics\\_and\\_performance\\_july\\_2014.pdf](http://www.pharmacyregulation.org/sites/default/files/standards_of_conduct_ethics_and_performance_july_2014.pdf). [Accessed February 2017]
3. National Patient Safety Agency. The to the design of the dispensing environment. 2007 <http://www.nrls.npsa.nhs.uk/resources/?EntryId45=59830> [Accessed February 2017]

# An Audit into Medicines Transfer by the Acute Medical Admissions Unit (AMAU).

Beth Palmer

## **FOCAL POINTS:**

- To gain an understanding of the level of the problem of poor medicines transfer by AMAU after complaints from pharmacy staff covering wards.
- Investigate the patient safety and cost implications.
- 70% of patients had their medicines reach their locker and 2 patients had missed medicines due to unavailability.

## **INTRODUCTION:**

It was brought to the attention of the pharmacy department that medicines issued by the pharmacy to patients on AMAU were often not being sent with the patients when they were being moved to another ward. This could lead to patients missing doses of their medication and have cost implications from re-ordering the missing medications. The purpose of this audit was to evaluate the extent to which medicines were reaching the patients' lockers and therefore the number of patients who missed doses. The audit standards were that 100% of medicines reached the patients locker and no patients had missed doses for medicines that were ordered the previous day. The total potential cost implication was assessed also. The aim was to improve nurses' practice of correct storage of medicines.

## **METHODS:**

A pilot study of 12 patients was conducted and changes were made to the recording form to accommodate additional patient information. Ethics committee approval was not needed.

Data from 117 patients was collected for 3 weeks between October and November 2016. All patients who had medicines ordered to AMAU the previous day and were still in the hospital were included. At AMAU or the patient's new ward, the medication that was ordered was located and it was recorded if it had reached the patient's bedside medication locker. The patient's chart was also checked for any missing doses that were given a code 5 indicating that the medicines were unavailable.

The clinical rooms in AMAU were also checked to determine whether any medicines were left and therefore were not received by the patient. Any medication found elsewhere on AMAU by the pharmacy staff was recorded and returned to the patient's locker if still an inpatient. The potential cost of these medicines if they were to be re-ordered by ward staff was calculated.

## **RESULTS:**

70% of the patients that were assessed had their medicines reach their medication lockers. Medication was often found in the clinical room of AMAU. 2 patients had missed medicines that were charted as 5 due to unavailability.

175 medicines were found on AMAU. The overall potential cost if all of these medicines were re-ordered was £1285.67. The cost of these medicines that were re-ordered because they couldn't be found was £103.87.

## **DISCUSSION:**

The results did not meet the 100% standard but the number of patients whose medicines did not reach their locker and who missed doses was not as many as initially suspected. Many of the items that were ordered were stock on the ward and it is likely that this was used to avoid missed doses for patient's whose medication did not reach them. Also staff were aware that they were being audited which may have influenced their behaviour. In the interest of patient care, missing medication that was found by the auditor or pharmacy staff was brought to the patient's medication locker to prevent the patient from missing doses; this then also prevented the same medication from being reordered and would have affected the actual re-order cost calculated. Since completing the audit a staff nurse on AMAU has asked the auditor to help develop a QIP to address the problem and will use the result of this audit as a baseline assessment.



# Assessing the Appropriateness of Relvar Ellipta 184/22 Prescribing in Primary Care in Aneurin Bevan University Healthboard (ABUHB)

Bethan Chesterman

## FOCAL POINTS:

- This audit aims to assess whether Relvar Ellipta 184/22 is prescribed appropriately in ABUHB, according to health board and BTS asthma guidelines.
- Relvar Ellipta 184/22 is a very potent high-dose inhaled corticosteroid (ICS), which needs to be prescribed with caution due to the potential for systemic absorption and long-term effects of corticosteroid treatment.
- Following the audit, it was found that a large percentage of patients were inappropriately prescribed Relvar 184/22, either due to prescribers diverting from 'stepping up' guidelines, initiation in primary care or being prescribed for COPD.

## INTRODUCTION:

Relvar Ellipta 184/22 is a high-dose ICS/ long-acting beta2 agonist combination inhaler, indicated at step 4 of current asthma guidelines. Relvar Ellipta comes in two strengths: 92/22 and 184/22 with the latter containing an equivalent of 2000 micrograms beclometasone dipropionate from one daily dose. It is not licensed for COPD as there is no evidence that the higher strength is any more effective than the lower strength, and it may increase the risk of non-fatal pneumonia.

I identified that 100% of patients should fulfil the following audit standards:

1. Have an annual COPD/ asthma review with a trained healthcare professional
2. Be appropriately stepped up according to the BTS asthma, COPD and ABUHB guidelines if control not adequate
3. Only be initiated on Relvar 184/22 after referral to secondary care
4. Be prescribed Relvar 184/22 (within its license) for asthma only

## METHODS:

- Data was attained on quantity of Relvar 184/22 prescribed in GP surgeries using the CASPAR system.
- A data collection form was designed and used to collect data on 50 patients across 3 GP surgeries in Newport.
- Data was collected over a two-day period in March 2017.
- **Inclusion criteria:** All patients currently prescribed Relvar 184/22

## RESULTS:

All data was entered into Microsoft Excel and analysed to produce tables and graphs. The results corresponds to the audit standards above.

1. **72%** of patients prescribed Relvar 184/22 had an annual asthma/ COPD review.
2. **40%** of patients were appropriately stepped up according to BTS and ABUHB guidelines.
3. **20%** of patients were initiated on Relvar 184/22 after referral to secondary care.
4. **62%** of patients were prescribed Relvar 184/22 for asthma.

## DISCUSSION:

I have identified that Relvar 184/22 is not being prescribed appropriately in ABUHB. A large proportion of patients are using Relvar 184/22 for COPD, which is not a licensed indication. Some reasons that I found for the inappropriate prescribing were: lack of staff knowledge about Relvar potency, consultants not writing a strength of Relvar for the GP to initiate on letters, transcribing errors when patients are discharged from hospital on Relvar 92/22 and accidentally started on 184/22 and surgeries using the programme 'Vision' – automatic selection of Relvar 184/22 when prescribing (staff would have to go in and physically change to 92/22 if required).

I have found that the audit standards are not being met and I proposed some recommendations. I recommend that staff are educated on the potency of Relvar 184/22 and to remind them that there is a lower strength. Staff need to be aware of the licensing of Relvar 184/22 and that it is not licensed in COPD. I will recommend that consultants write the strength of Relvar on letters to GP's and will ensure that staff are better educated on the ABUHB inhaler switching policies.

# Utilising e-Discharge to Send Discharge Letters from the Hospital to Community Pharmacies and Facilitate Discharge Medicines Review Completion.

Bisma Ali

## FOCAL POINTS:

- Increase the number of Discharge Advice Letters (DALs) sent electronically to facilitate Discharge Medicines Review (DMR) completion.
- Establish hospital pharmacy staff awareness of the Choose Pharmacy application.
- The results indicate that with staff education DALs were successfully sent via Choose Pharmacy, thus improving the 0% baseline.
- This highlights the need for a tool such as Choose Pharmacy as an electronic platform to help facilitate DMR completion.

## INTRODUCTION:

The DMR service has shown to reduce medication and safety related issues arising after hospital discharge.<sup>1</sup> However, many commonly experienced barriers have been identified regarding DMR uptake such as; identifying suitable patients, lack of access to necessary information, administration, and time consuming paperwork.<sup>1</sup> Choose Pharmacy is a web-based application which acts as IT connectivity between primary and secondary care. This application allows accredited Welsh community pharmacies to access DALs and use the information to complete an electronic DMR. The DAL must be generated by the National Welsh Clinical Portal (WCP) and Medicines Transcribing and electronic Discharge (MTeD) system. This IT connectivity can tackle the barriers listed above and help encourage DMR uptake.

## METHODS:

PDSA 1: Establish and test Choose Pharmacy functionality in primary and secondary care.

PDSA 2: Educate pharmacy staff members on Choose Pharmacy in secondary care.

PDSA 3: Create a reminder tool to help encourage the use of the Choose Pharmacy application when medicine management technicians undergo a drug history on the ward, as part of routine practice.

Ethics committee approval was not required.

## RESULTS:

PDSA 1: The total amount of data collected from patients on their community pharmacy and the total number of DALs sent was 0. This cycle was completed to check whether Choose Pharmacy was functional. Staff members in the secondary care setting were not aware of the application or which pharmacies are applicable.

PDSA 2: 40% of the DALs were sent through to community pharmacies electronically after hospital discharge. Data was collected from 10 patients where 50% were excluded as their pharmacies were not available on the application.

PDSA 3: 30.8% of the DALs were sent through to community pharmacies electronically after hospital discharge. Data was collected from 13 patients where 46% were excluded as their pharmacies were not available on the application.

A total of 8 DALs were sent out to community pharmacies. However, 11 of the 23 patients from which data was collected, did not have their pharmacy installed on the software due to delayed rollout of the application.

## DISCUSSION:

This project demonstrates how easy and effective Choose Pharmacy can be to help with DMR uptake across Wales. Electronic access via Choose Pharmacy will provide improved quality discharge information, smooth and safe transition of patients from hospitals to community pharmacies.

This service improvement could only be carried out on one ward, however after implementing change on the current process and educating staff, DALs were successfully sent electronically. This has had significant impact as no DALs were sent from this ward before this project. If this was to carry on throughout the hospital, there would be an increase in DALs being received by community pharmacies and thus aiding DMR uptake and completion.

The main limitation to this service improvement was the delayed rollout of the Choose Pharmacy application across Wales. All the pharmacies gathered from the data collection were not fully functional so DALs could not be sent to them electronically. However, if the Choose Pharmacy application had been launched in all the community pharmacies, there could have been a potential of a 91% success rate.

## REFERENCES:

1. Alum MF, et.al, Evaluation of the discharge medicines review service, 2014, pages 57-144

# All Wales Gentamicin Audit

Ceri Thomas

## FOCAL POINTS:

- The audit was undertaken to establish the scope of the problem regarding gentamicin prescribing and therapeutic drug monitoring (TDM).
- The results of the audit show that local antimicrobial guidelines are not adhered to.
- National guidelines are advisable, along with local education sessions on gentamicin prescribing and TDM.

## INTRODUCTION:

Antimicrobial Resistance (AMR) is a growing problem which can lead to difficulty treating infections. AMR also has major cost implications for the NHS. Gentamicin is a narrow spectrum antibiotic with serious adverse effects, particularly ototoxicity and nephrotoxicity. Gentamicin requires tailored dosing using weight and creatinine clearance, and regular TDM. There are currently no nationally agreed standards for gentamicin prescribing and TDM and a range of different guidelines across the country. This audit was completed in hospitals across Wales to determine the level of adherence to local guidelines.

## OBJECTIVES

1. To determine the proportion of initial, second and third doses of extended interval (EI) gentamicin that comply with the local guideline (+/- 20mg)
2. To determine the proportion of initial serum gentamicin levels that are taken within the time frame specified by the local guideline
3. To determine the proportion of gentamicin doses following the first mandated gentamicin serum level that are prescribed to be given at the correct time

## METHODS:

Data were collected for all adult inpatients (>18 years) initiated on EI gentamicin, who did not meet the exclusion criteria.

A data collection period of four weeks then began on the 3rd of October 2016.

Due to new local guidelines being introduced, a second data collection period began on November the 1st 2016 for 8 weeks. No suitable patients were identified during this period. There were no changes to the recommendations for dosing, when to take levels and timing of doses in the new local guidelines.

Therefore pilot data, data collection 1 and 2 were all comparable in terms of the objectives, so the three periods were combined.

## RESULTS:

### Objective 1:

- Hospital: the first dose followed guidelines 60% of the time, increasing to 67% for the second and third doses.
- Health Board: the first dose followed guidelines 63.6% of the time. The second and third doses increased in adherence to 67%.
- All Wales: the first dose followed guidelines 47% of the time. The second and third doses increased in adherence to 48%.

### Objective 2:

- Hospital: levels were taken at the wrong time 75% of the time, all being too early.
- Health Board: levels were taken at the wrong time 60% of the time, all being too early. The timing of 20% of levels could not be determined.
- All Wales: levels were taken at the wrong time 25% of the time. The timing of 30% of levels could not be determined

### Objective 3:

- Hospital: All doses were prescribed to be given at the correct time
- Health Board: Doses were prescribed to be given at the correct time 78% of the time. For 22% of the doses the time the dose was due to be given was not recorded.
- All Wales: Doses were prescribed to be given at the correct time 39% of the time. For 40% of the doses the time the dose was due to be given was not recorded.

## DISCUSSION:

The audit confirmed that local guidelines are not being adhered to throughout Wales. Locally, as the Health Board introduced new guidelines, it is possible the guidelines were not adhered to due to a lack of knowledge of them. Better promotion of the guidelines is needed before a repeat audit to assess if adherence has improved.

On the whole it can be seen that the guidelines are not being adhered to with regards to calculation of doses, timing of doses and timing of levels. The audit also identified an issue with documentation of the time doses are due.

# All Wales Gentamicin Audit

Clara Danielsen

## FOCAL POINTS:

- The aim of the audit was to assess the level of adherence to Extended Interval (EI) gentamicin dosing and therapeutic drug monitoring guidelines of a district hospital in South East Wales.
- Nearly 30% of all doses prescribed were too high, however 80% of initial levels were taken correctly.
- The development of a gentamicin dose calculator may aid prescribers in ensuring correct dose alterations are made for overweight and obese patients.

## INTRODUCTION:

Across Wales it is anecdotally known that gentamicin prescribing is a source of medication errors, from incorrect dosing to incorrect management and recording of levels. It is hoped that the results from this audit will contribute to the development of a national guideline for better prescribing and monitoring. Gentamicin is a broad-spectrum aminoglycoside antibiotic, commonly used to treat infections caused by gram negative bacteria, such as urinary tract infections. It has a narrow therapeutic window and regular monitoring of levels within the body is crucial due to its potential to cause serious dose-related side effects, such as nephrotoxicity and ototoxicity.<sup>1</sup>

EI dosing has overtaken traditional multiple daily dosing as it has been shown to be as effective and less nephrotoxic. Several nomograms can be used to determine the correct gentamicin dose, the most commonly used are the Hartford and the Urban and Craig. Within the hospital audited the Urban and Craig nomogram was used, with Ideal Body Weight (IBW) used when a patient has a BMI of greater than 30.

## METHODS:

Data was collected over a four-week period. Patients were identified using biochemistry results or the help of ward technicians and pharmacists. All data was recorded using All Wales Standardised Data Collection forms. The BMI of each patient and the correct dose (5mg/kg) was calculated and compared against the dose prescribed.

The time the first gentamicin infusion was started was recorded, from this it was determined if the initial gentamicin level had been taken within the allowed six to fourteen-hour interval following the infusion. The timing of the second and third doses were recorded using the initial level and nomogram; the appropriate dosing interval was calculated. This was compared with the interval used by the prescriber. This data was anonymised and entered in to an excel spreadsheet, graphs were made to demonstrate any trends.

## RESULTS:

Less than 50% of first (n=48), second (n=45), and third (n=34) gentamicin doses were prescribed correctly, nearly 30% of all doses were too high. The percentage of initial levels being taken at the correct time was good, with 80% of levels being taken correctly and only 2% having no level taken (n=48). Over 70% of second and third doses were prescribed to be given at the correct time, this demonstrated prescribers were using the nomogram accurately and determining the appropriate dosing intervals. Hospital results for correct timing of second and third doses were above the All Wales average.

## DISCUSSION:

Anecdotally it was believed the greatest issue would lie with the initial level not being taken within the specified time frame; this was however not the case. The poorest results came from doses not being correctly prescribed; with many not being adjusted to use IBW in overweight patients; potentially leading a patient to develop toxicity. A recommendation following this audit, would therefore be the development of a calculator to allow a prescriber to input specific patient demographics and a correct dose be calculated. A calculator has been developed by the Scottish Antimicrobial Prescribing Group, it may be adapted and incorporated in to the current antimicrobial guideline apps used by many Health Boards across Wales.<sup>2</sup>

## REFERENCES:

1. Garragh FR. Gentamicin: dose regimens and monitoring. The Pharmaceutical Journal [Internet]. 2015 02/01/17; 295:[5 p.].
2. Scottish Antimicrobial Prescribing Group. Gentamicin and Vancomycin Scotland: Scottish Medicines Consortium [cited 2017 02/17].

# Audit of the Use and Availability of Oral and Enteral Equipment on General Medical and Surgical Wards.

Connor Wainwright

## FOCAL POINTS:

- To determine if wards had the necessary oral and enteral syringes for safe drug administration
- To determine whether staff were aware of the different syringe types
- To determine appropriate stock holding for the different types of ward
- Patient safety alert 19 set out new equipment to be used

## INTRODUCTION:

There are inherent risks with different formulations of medication, it is vital that these are administered via the correct route, using the correct equipment facilitates this. Due to such risks associated with incorrect administration of drugs a national patient safety alert was published. Patient safety alert 19 states that there had been 33 incidents of oral medication being administered intravenously between 31st January 2005 and 31st of May 2006 with 3 deaths being reported between 2001 and 2004<sup>1</sup>. To reduce these risks different syringes have been developed for particular administration routes, for example, the development of ENFit equipment for enteral tube administration uses reverse luer lock meaning that ENFit equipment cannot attach to IV equipment and vice versa. ENFit equipment in healthcare has been phased in with suggested timescales for implementation of equipment. PENG (promoting excellence in nutrition support) produced a timeline of events which consisted of: implementing a lead for the trust in July 2015 and updating nutrition policies and local information, through to summer 2016 by which there should be an introduction of all ENFit Tubes, devices and syringes<sup>2</sup>. Due to a setback with the accuracy of low dose syringes, adapter packs have been made available till the end of 2016 and this timeline slightly delayed. In practice it would appear that not all staff members were aware of the changes to ENFit equipment.

## METHODS:

Data was collected twice by the auditor. The first collection concentrated on handing information out and informing the sisters of the oral and enteral equipment available and recording the availability on the ward of both oral and enteral syringes. This involved going to wards and speaking to the sister in charge of that ward on that day and asking where their enteral and oral syringes were kept, further to this bottle adapters were given to all wards and blunt filter needles to a few. Data was collected again a couple of weeks later, to see if the equipment kept had changed. Documentation of whether this equipment was oral or enteral was recorded in the second data collection not just the sizes of equipment available as previous. Ethics committee approval was not needed.

## RESULTS:

It was found that not all wards do nasogastric feeding so these were excluded but overall there was a lack of awareness surrounding the differences and use of enteral and oral equipment. Prior to this audit no wards had bottle adapters for use with enteral syringes but were given these as a result and some wards were given blunt filter needles. It was seen that after handing information out and increasing awareness ward stock levels of different syringes had increased on average by 0.875. When looking at the results in detail it is seen that some wards stock did not change at all, and one ward had an increase from keeping only 1 syringe to now stocking 4 different syringes.

## DISCUSSION:

Differences in ward stock can be accounted for by the differing requirements of patients on each ward. It was noted that awareness and stock kept of different enteral and oral equipment varied greatly across each ward. Overall it was seen that there was an average increase of 0.875 post information giving which would indicate a greater increase in awareness in general.

## REFERENCES:

1. National patient safety agency (NPSA) 2007, Promoting safer measurement and administration of liquid medicines via oral and other enteral routes, page 1
2. Promoting excellence in nutrition support (PENG) 2015, Implementation support for Enfit connector, available at <http://www.peng.org.uk/pdfs/hcp-resources/implementation-support-for-enfit-connector.pdf>

# All Wales Gentamicin Audit 2016/17

Dana Esmail

## FOCAL POINTS:

- To assess the level of adherence to extended interval (EI) gentamicin dosing and therapeutic drug monitoring guidelines in Welsh hospitals.
- Results showed that none of the standards reached 100% as there were discrepancies with dosing and monitoring gentamicin
- A possible solution includes the use of a gentamicin sticker to reduce the scope for error and a standardised gentamicin guideline for use across Wales.
- Small sample size within this health board reflects how gentamicin is not widely used in comparison to other hospitals across Wales.

## INTRODUCTION:

Following the rise of *Clostridium difficile* due to the overuse of broad spectrum antibiotics, there is a potential upsurge in the use of aminoglycosides. Gentamicin is the preferred aminoglycoside choice in the UK and therefore healthcare professionals should be extremely well educated and vigilant in terms of prescribing and monitoring gentamicin correctly. The variances of gentamicin guidelines across Wales has led to an increase in prescribing and monitoring errors. Because of the risk of toxicity and its concentrated-dependent activity, gentamicin requires tailored dosing and regular therapeutic drug monitoring, which reiterates the need for a nationally agreed standard guideline on the prescribing of gentamicin across Wales, accompanied by supplementary documentation to ensure its safe use.

## METHODS:

- A pilot was carried out in order to navigate areas within the data collection form, which needed improving before the official audit began.
- Patients were identified using the hospital intranet and these patients were visited in order to assess if they fell under the inclusion criteria.
- Due to the small number of patients identified, the audit was extended to another hospital within the same health board.
- Six patients were audited.
- Results were analysed using Microsoft Excel.

## RESULTS:

- 67% of initial, second and third doses of extended interval (EI) gentamicin was prescribed correctly as per the local guideline.
- 33.33% initial EI serum gentamicin levels was taken at the correct time as per the local guideline.
- 67% EI gentamicin doses following the interpretation of the first mandated gentamicin serum level was prescribed to be given at the correct time.

## DISCUSSION:

The small sample size makes this audit considerably less reliable to spot any trends and reflects gentamicin's irregular use within this health board. However, there were many errors unveiled in terms of dosing and monitoring gentamicin, highlighting the need for action. This reinforces the necessity to educate clinicians on the importance and the vigilance when it comes to prescribing this antibiotic, especially if the use of aminoglycosides is going to increase. 33% patients' gentamicin dose was calculated incorrectly. This was due to the lack of education when it came to dosing patients who required a dose based on adjusted body weight, where height is essential in this calculation. 100% of patients did not have their height recorded on the drug chart. Approximating the height can result in an overdose which increases the risk of toxicity. 33.33% of patients' had a level taken outside the recommended time frame. This problem originated from prescribers circling a time of day on the drug chart, creating a subjective window and therefore a false positive reading if the level was taken too early. A solution to both of these errors is to create a gentamicin specific sticker, which includes prompts for the prescriber such as height, weight and serum creatinine of the patient to create an accurate calculation. The sticker includes a time for the gentamicin to be given and therefore the subsequent level at which the gentamicin should be taken. Using this sticker and producing a standardised guideline for gentamicin could reduce prescribing errors across Wales.

# Increasing Awareness of the Risks of Long-term Proton Pump Inhibitor Use and Reducing their Unnecessary Prescribing in primary Care

Daniel Edwardes

## FOCAL POINTS:

- The primary aim of this cross-sector service improvement project was to encourage pharmacists and patients to be aware about PPI over-use and the associated risks.
- Although the vast majority of patients had never considered stopping their PPI, every patient suitable for stepping down was willing to try.
- In conclusion, simple opportunistic interventions were an invaluable tool to get people thinking about PPIs and to reduce the burden of polypharmacy. Pharmacists were grateful to have a procedure to help guide the MURs.

## INTRODUCTION:

Proton Pump Inhibitors (PPIs) are a principal treatment for gastro-intestinal disorders. Their effectiveness and tolerance have led to substantial usage across the UK. In Wales, PPI prescribing continues to rise, with BCUHB leading. There is increasing evidence that long-term use of PPIs is associated with adverse effects, including increased risk of *Clostridium difficile* infections, risk of osteoporosis and masking signs of stomach cancer.

PPIs should ideally be used for a maximum of 8 weeks. If patients are prescribed a PPI for implied short-term use without sufficient explanation of the indication and duration, they can, potentially, remain on the PPI indefinitely through inappropriate repeat prescriptions. Polypharmacy is an issue, so it is essential that patients and healthcare providers have regular reviews to ensure that PPIs are being prescribed appropriately to improve patient safety.

AWMSG and WeMeReC have published guidance about appropriate PPI prescribing.<sup>1</sup> The main objectives of this project were to use these resources to implement a procedure for identifying patients suitable for reducing their PPI use, provide support and advice, and ensure communication between the community pharmacies and GP practices.

## METHODS:

The primary method involved using stickers to attach to prescriptions to identify suitable patients for opportunistic interventions. A SOP for conducting the MUR was developed. A form was designed to record relevant patient information. Bilingual patient information leaflets were sourced from the AWMSG website.<sup>1</sup> Pharmacists were briefed about how to use the forms. Data was gathered from completed forms after 5 weeks. Ethics committee approval was not required.

## RESULTS:

14 patients had PPI consultations in 2 pharmacies and a GP surgery, 8 (57.1%) of whom were suitable for stepping down including 1 who had previously considered doing so.

All 8 (100%) were willing to step down and 3 MURS were actioned by the surgery. No follow-ups were observed.

## DISCUSSION:

100% of patients suitable to step down were willing to, suggesting that patients are concerned about unnecessary medication use, and have confidence in pharmacists to help improve their care. 92.9% of the patients had never considered stopping their PPI before being invited for a consultation. Opportunistic interventions like these are a perfect way to get them thinking.

Patients were happier to be involved in a conversation about their medicines, rather than simply being told what to do. It is important to find a new regime which suits the patient. Regimes discussed during the project included dose reduction, alternate day dosing, and prescribing of Peptac liquid or Ranitidine.

This service improvement project encouraged people to think about PPI over-use and the associated risks. Although there were limitations, including the relatively short time-scale, the simple procedures introduced to the pharmacies and surgeries will hopefully continue to be followed.

The project demonstrated that working together across sectors is key to optimise patient care. It explored what community pharmacies and GP surgeries can do to increase awareness of PPI use. Future research would hope to address what secondary care can do, and how all the sectors can work together.

## REFERENCES:

1. All Wales Therapeutic and Toxicology Centre. All Wales Proton Pump Inhibitor and Dyspepsia Resource Pack. 2013. URL: [<http://www.awmsg.org/docs/awmsg/medman/All%20Wales%20Proton%20Pump%20Inhibitor%20and%20Dyspepsia%20Resource%20Pack.pdf>] Last accessed 22 March 2017

# An Audit Assessing and Improving Pharmacists' Knowledge of the Newest ABUHB Guidelines on Asthma Treatment and Using this Knowledge to Evaluate Patients Asthma Control Through Consultation.

Daniel Hicks

## FOCAL POINTS:

- This audit addresses the updates regarding ABUHB guidelines for asthma treatment. An information package was sent out to all pharmacists employed in the community pharmacy detailing the changes.
- Over a three week period, patients who suffered from asthma were targeted to take part.
- Findings indicated that most patients asthma were not adequately controlled and making an intervention was beneficial through advice to referring them to a pharmacy enhanced service.

## INTRODUCTION:

Throughout the UK, it is estimated that 5.4 million people are receiving treatment for their asthma, costing the NHS around £1 billion in the process <sup>1</sup>. As a sector, community pharmacy can have an opportunity to improve the health and wellbeing of patients with asthma and to reduce the levels of morbidity and hospital admissions. This can be done by simply providing easy access to well trained professionals who can offer advice and promote healthy lifestyles in the process.

## METHODS:

The audit was carried out in three steps:

1. Assessment of the pharmacy: The pharmacy itself was assessed for its supplies such as relevant tester asthma inhalers in stock and whether the pharmacy had up to date information on asthma readily available.
2. Learning package: A learning package containing all the up to date asthma guidelines from the ABUHB health board, along with relevant information on the new inhalers and links to videos demonstrating how they work etc.
3. Consultations: Identifying asthma patients and discussing their asthma with them focusing on any queries they have and asking them to complete an asthma control test over a period of three weeks.

Upon consultation with the superintendent pharmacist, ethics committee approval was not needed.

## RESULTS:

The information package sent out to pharmacists increased their knowledge of the condition and the treatment guidelines in 4/5 pharmacists that regularly work in the pharmacy.

From the 26 consultations that were carried out, 17 involved advice being given to the patient/carer with inhaler technique dominant (11), dosage (8), spacer advice (4) and side effects (3) were the other topics discussed. 7 participants were smokers who were all made aware of the smoking cessation service that the pharmacy offers with 2 participants being referred to the service. Asthma control tests were filled out by 22 participants with the mean score equalling 17/25 indicating most of the participants' asthma were not adequately controlled (Highest = 23, Lowest = 8). Of these 26 consultations, 5 were incorporated into an MUR, earning the pharmacy £140.

## DISCUSSION:

Following the ABUHB asthma treatment guidelines has led to increased confidence when discussing asthma treatments with patients. Putting a emphasis on conducting consultations with asthma patients has lead to many interventions being made, enhancing the patients' treatment and improving their pharmaceutical care through MUR's. Community pharmacy can build on this relationship with patients as it is easily accessible to speak to a healthcare professional compared to other healthcare sectors as no appointments are necessary. This particularly appeals to patients who are working and struggle to fit in time around working hours. Building this relationship between community pharmacy and asthma patients will have a positive impact on the treatment of the patients' condition. This is important as the results show that most patients' asthma was not adequately controlled. Building relationships will also increase the opportunities for regular annual MURs and other enhanced services i.e. flu vaccinations and smoking cessation. These increasing opportunities will provide financial benefits to community pharmacy as well as reducing wastage.

## REFERENCES:

1. Asthma facts and statistics [Internet]. Asthma UK. 2017 [cited 20 March 2017]. Available from: <https://www.asthma.org.uk/about/media/facts-and-statistics/>

# Audit of the Prescribing of Tramadol for Hospital Inpatients in a University Health Board

Daniel Salmon

## FOCAL POINTS:

- The aim of the audit was to find out if prescribing of tramadol is in accordance with recommended practice<sup>1</sup>
- The results show that codeine is not always being used first line, and review of the need for Tramadol on discharge and increasing awareness of interactions needs improvement.
- From this audit it is apparent that there is still work to be done to improve tramadol prescribing

## INTRODUCTION:

Within the Health Board, previous audits carried out in Primary care<sup>1</sup> have identified that inappropriate ongoing prescribing of tramadol within Primary care is an issue following discharge. It was felt that discharging patients on tramadol increases the likelihood that their GP will continue to prescribe it. Together with Advisory Council on the Misuse of Drugs guidance on tramadol<sup>2</sup> it was felt that an audit was required to determine whether initiation during inpatient stay is appropriate and that the ongoing need is reviewed prior to discharge. The standards audited against were;

- 100% of patients prescribed tramadol are allergic to codeine/morphine or have another reason for tramadol to be clinically indicated.
- 100% of patients that are prescribed tramadol during admission have it discontinued on discharge unless identified as clinically appropriate.
- 100% of patients are discharged with no more than 7 days supply of tramadol

## METHODS:

Ethics committee approval was not required for this audit. All adult patients newly initiated on tramadol were included. A data collection form was produced in collaboration with a colleague as this was a health board wide audit and was run across two district general hospitals. The form was initially piloted on all 6 surgical wards. Changes were made to also include medical patients and the data collection form updated. Data was then collected over a two week period with the assistance of ward pharmacists and technicians. In addition the CD registers in the pharmacy and on the wards were also used to identify patients prescribed tramadol as in-patients or on discharge. Data was collated and analysed using Microsoft excel.

## RESULTS:

During the audit period 33 inpatients were newly prescribed tramadol. None of the patients prescribed tramadol had a documented intolerance to codeine or morphine or a specified reason for tramadol to be prescribed. Of the 24 patients discharged during the audit period, nine patients (37.5%) were discharged with tramadol, although none were discharged with more than a weeks supply. There were nine patients (27.2%) taking interacting medication such as antidepressants. Surgical wards prescribed tramadol the most with only one of the patients in the audit from a medical ward.

## DISCUSSION:

From this audit it is apparent that there is still work to be done to improve tramadol prescribing with regards to; prescribers should always prescribe codeine first if not contraindicated, ongoing need for tramadol should be reviewed on discharge and awareness of interactions increased. Discharging patients on tramadol increases the likelihood that their GP will continue to prescribe it which could cause dependence and increase the risk of interactions. The recommendations from this audit are that clear guidelines must be developed for the treatment of acute pain for in-patients and tramadol to be used only where codeine is ineffective or contraindicated. A limitation of this audit was a lack of detail into the reasoning behind prescribing of tramadol over other analgesics; this is something future audits could look into as well as following up patients to see how many continue to take tramadol a month after discharge.

## REFERENCES:

1. Cwm Taf Medicines Management Directorate. Standard operating procedure: Tramadol switch to codeine, morphine or oxycodone. 2015
2. Advisory Council on the Misuse of Drugs. ACMD consideration of tramadol. 2013

# An Audit to Evaluate the Safety, Quality and Timeliness of Subcutaneous Insulin Prescribing for Diabetic Inpatients

Darren Smith

## FOCAL POINTS:

- The introduction of new high strength and combination insulins has resulted in numerous medication errors.
- Audit aimed to evaluate the safety, quality and timeliness of insulin prescribing, and the impact on patient safety.
- 77% (n=30) of prescriptions at one hospital site had additions made by pharmacists, but still only 40% (n=12) met the health board's insulin prescribing standards.
- Prescriptions contained enough information to prevent patient harm but lacked accuracy and consistency.

## INTRODUCTION:

Since the introduction of high strength, fixed combination and biosimilar insulin products, numerous medication errors have been reported across Wales. Following these incidents, the MHRA and Patient Safety Wales have issued alerts about how to safely prescribe these newer products, and to reinforce local prescribing standards<sup>1,2</sup>:

1. Insulin should be prescribed on the appropriate administration chart, in addition to being indicated on the front of the All Wales Medication Chart and endorsed on the main side of the drug chart.
2. All patients should receive their first expected dose of insulin on time.
3. Drug charts should be reviewed by a pharmacist within 24 hours of admission
4. All insulin prescriptions must state – full brand name, strength of insulin, device used, dose (specified in units which should never be abbreviated), and signed by a valid prescriber.

## METHODS:

Data was obtained using the health board's 'Clinical Portal', patient medical notes and inpatient medication charts. This data was input onto a standardised data collection form used across four hospital sites within the health board (this abstract discusses one hospital's results). The audit only included prescriptions for adult inpatients prescribed subcutaneous insulin for type I/II diabetes who hadn't been admitted for reasons relating to their diabetes.

## RESULTS:

Standard	Measures	Percentage of Prescriptions that met standard (n=30)	Proposed Standard Set
1	Insulin prescribed on correct chart	100%	100%
	Insulin ticked on front of chart	90%	100%
	Insulin endorsed inside main drug chart	87%	100%
	Prescriptions which met standard 1 completely	77%	100%
2	First expected dose of insulin documented as given	73%	100%
3	Prescription reviewed by pharmacist within 24 hours	83%	85%
4	Met standard 4 BEFORE pharmacist made additions	0%	-
	Met standard 4 AFTER pharmacist made additions	40%	100%

## DISCUSSION:

All prescriptions had at least one means to identify that the patient was prescribed insulin, but 100% compliance to all the measures for standard 1 is certainly achievable. Regarding standard 2, 63% (n=8) of patients who didn't receive their first expected dose, did so without justifiable reason (i.e. not held for a clinical reason). A deviation sheet on the insulin chart would prompt staff to provide reasons why doses weren't given. The prescriptions audited fell just short of standard 3, but 2 patients who weren't seen were admitted on a weekend. Finally, the results for standard 4 indicate that prescribers (and pharmacists) are unaware that the insulin's strength needs to be endorsed even if there is only one strength available (60% (n=18) failed due to a lack of strength). Prescriber education on the health board's medication policy is essential to rectify this, and prescribing templates might be useful. Only one "unsafe" prescription was identified at this site, whereby a strength wasn't written when multiple strengths were available. The results from this hospital suggest that insulin charts are not being written in a consistent manner, with essential pieces of information missing on the majority of prescriptions.

## REFERENCES:

1. High strength, fixed combination and biosimilar insulin products: minimising the risk of medication error, MHRA, April 2015 (<https://www.gov.uk/drug-safety-update/high-strength-fixed-combination-and-biosimilar-insulin-products-minimising-the-risk-of-medication-error>)
2. Minimising the risk of medication errors with high strength, fixed combination and biosimilar insulin products, PSA005, Patient Safety Wales, July 2016 (<http://www.patientsafety.wales.nhs.uk/sitesplus/documents/1104/PSA005%20Biosimilar%20insulin%20WEB.pdf>)

# Is Insulin Being Safely Prescribed Within Singleton Hospital

Dillan Mistry

## FOCAL POINTS:

- To assess and determine whether insulin was being prescribed correctly and safely within Singleton Hospital
- All four standards were passed with 2 showing a 100% pass rate.
- Singleton Hospital showed good knowledge and awareness of the safety guidelines when it comes to writing drug charts and pharmacist involvement in medication reconciliation was high.

## INTRODUCTION:

The National Patient Safety Agency (NPSA) Alert 005<sup>1</sup>, highlighted the need to improve the awareness of prescribing requirement of patients being prescribed Insulin in line with standards National guidelines<sup>2</sup>. Further to this, from the increase in the variety of insulins available particularly the introduction of new high strength insulins, safety in prescribing is increasingly becoming a concern. Given this information, it seemed appropriate to determine whether insulin was being safely prescribed within Singleton Hospital.

## METHODS:

An inclusion criteria was set for the patients to be audited to help ensure regularity with the patient cohort, these patients identified were then scouted within the hospital either through communication with ward staff or by checking the Indigo Review System. Patients were then asked for permission to be involved within the audit and then drug and insulin charts were screened and information noted within data collection form. This was then inputted onto a spreadsheet and the results analysed at a later date. Ethical approval was not required for this audit cycle.

## RESULTS:

Standard 1 shows the lowest success rate at 76%. However due to the nature of the standard more looking at logistical prescribing factors rather than factors that are related to patient safety, this is not of major concern. Both standards 2 and 4 showed 100% pass rate. Looking more closely at standard 4 before pharmacist intervention poor compliance can be seen, however post intervention particularly with the addition of brand name and device this standard then rose to 100%. Standard 3 showed a 97% compliance rate.

## DISCUSSION:

Looking at Standard 1 shows with the lowest success rate the nature of the standard looks at logistical prescribing factors rather than those related to patient safety and hence a low compliance here can still be accepted.

Results in standards 2 and 4 s can primarily be explained by the knowledge that patients on insulin tend to be very aware of their own regime and are able to tell doctors upon admission Further to this, within Singleton after the alert was passed by Patient Safety Wales the hospital staff were sent multiple memos as well as signposts about the high strength insulins were readily distributed around the hospital indicating that awareness was already present about insulin prescribing regulations.

Standard 3 showed one patient not seen within 24hours due to admission over the weekend. The high success rate here is potentially attributable to the increase in the number of pharmacists within SAU, enabling patients to be seen much more quickly by pharmacist The results seen in standard 3 can also be used to justify the response seen in standard 4. As additions were still needed to be made by the pharmacists, particularly the device and brand name, helping to ensure that we were compliant with the Health Board's guidelines. Further to this, as 3 charts were written by pharmacists this shows the increasing ability of pharmacists to help deliver excellent quality and safety in terms of care or patients particular with those on high risk medication.

## REFERENCES:

1. Patient Safety Wales. Patient Safety Alert 005. [http://www.patientsafety.wales.nhs.uk/sitesplus/documents/1104/PSA005%20Biosimilar%20\(10/03/2017\).](http://www.patientsafety.wales.nhs.uk/sitesplus/documents/1104/PSA005%20Biosimilar%20(10/03/2017).)
2. ABMU. Medication Safety Alert. [http://howis.wales.nhs.uk/sites3/Documents/926/CID1938%20MSA%20009%20\(10/03/2017\).](http://howis.wales.nhs.uk/sites3/Documents/926/CID1938%20MSA%20009%20(10/03/2017).)

# An Audit into Venous Thromboembolism Risk Assessment and Critical Medication Monitoring.

E Baczkowski

## FOCAL POINTS:

- Are patients prescribed appropriate venous thromboembolism (VTE) thromboprophylaxis, anticoagulation or have a documented reason against its use irregardless of completing the section of the All Wales Inpatient Medication Chart (AWIMC)?
- Four standards were developed from the All Wales Prescription Writing Standards set out by the All Wales Medicine Strategy Group (AWMSG) and disappointingly not one was achieved.
- Recommendations include staff training and development of a clear procedure for omitted medication.

## INTRODUCTION:

The Andrews Report showcased multiple failings regarding patient care and highlighted that omitted medicine doses were a significant problem. Doses of medication are often delayed/omitted for numerous reasons, however if they are critical medicines their omission can cause severe harm or death. In response, pharmacists at ABMU hospitals complete a 'snapshot' audit each month to measure key performance indicators developed by AWMSG. A key aspect of the 'All Wales Medication Safety Monitoring' audit involves VTE risk assessment completion, however phrasing of the current question provides a simple yes/no response irregardless if the patient is already prescribed appropriate thromboprophylaxis, anticoagulation or has a documented reason against its use. This audit aimed to assess current practice of risk documentation on the AWIMC and whether omitted doses were approved by the prescriber, recorded on the chart using non-administration codes and documented appropriately.

## METHODS:

Data were obtained over a two week period from the acute medical wards and ward D. The VTE section of the AWIMC was assessed for completion and the chart was reviewed to identify if appropriate thromboprophylaxis or anticoagulation was prescribed, or if an appropriate reason against its use had been documented. The last 24 hours were reviewed to identify omitted doses, observe the corresponding non-administration code and note the medication name(s) if critical according to a critical medicines list. If 3, 4, 5 or 6 were documented, the nursing notes were accessed to determine if a reason was noted and what action was taken in relation to the omission. Ethics committee approval was not required for completion of this audit.

## RESULTS:

Criteria	Percentage of standard achieved (%)
100% of hospital medication charts should have the VTE section completed even if a separate assessment has been previously documented (n=227).	70
100% of hospital medication charts should be completed with a signature for any drug administration or use the appropriate code for 100% of omitted doses (n=203).	94
Nurses should contact the prescriber, pharmacy, use their professional judgment and document the action taken in the patients' records for 100% of omitted dose (n=84).	37
Critical medication should not be omitted without approval from the prescriber in 100% of cases (n=84).	10

## DISCUSSION:

The priority of the acute medical wards is to treat the patient's presenting complaint(s) and VTE risk documentation may not always take precedence. Even though the standard was not achieved, the audit highlighted that 83% of the total number of patients audited received appropriate anticoagulation, thromboprophylaxis or had a documented reason against its use irregardless of completing the VTE section on the AWIMC. It was disheartening to observe that doses of critical medicines were omitted on all three wards and blank signature boxes still occurred even though they accounted for a small proportion of the total number of administered doses. There may have been a lack of clarity about what constitutes a 'critical medication' which may have contributed to missed dose e.g. electrolyte and vitamin replacement may not be considered as critical as Parkinson's medication.

# An Audit to Assess the Adherence to Local Guidelines for the Dosing, Administration and Therapeutic Drug Monitoring of IV Vancomycin.

Elan Ward

## FOCAL POINTS:

- The aim of the re-audit was to identify current standards of the prescribing of IV vancomycin based on the response to recommendations made by an audit conducted in 2014.
- In 2014, no patients had the IV vancomycin care pathway attached to their chart, whereas 77% of patients had the care pathway attached to their chart during the re-audit.
- Monitoring of vancomycin blood levels was the area with poorest results.
- Prescribing of vancomycin has improved since the audit in 2014, but the standard of 100% for the objectives were not met.

## INTRODUCTION:

Vancomycin is an antimicrobial which requires therapeutic drug monitoring (TDM) due to its side effect profile<sup>1</sup>. An audit, including nine patients, was undertaken in 2014 to observe vancomycin prescribing within the hospital. The audit recommended that in order to improve prescribing, staff needed to be more aware of the IV vancomycin guidelines and the importance of TDM. It recommended that the IV vancomycin care pathway should be attached to medication charts in order to aid prescribing.

This re-audit was conducted in order to identify any changes which have been made and identify areas which still require improvement. Objectives were set to determine whether:

- The IV vancomycin care pathway was attached to the medication chart.
- Loading doses and maintenance doses were prescribed as directed by the care pathway.
- The initial serum vancomycin levels were taken within the time frame specified by the guideline.
- The target blood level of vancomycin was documented.

The standard for each objective was set at a 100%.

## METHODS:

The audit was registered with the hospital's Clinical Audit Department. A data collection tool was created and piloted in October 2016. The data was collected over two months during November and December 2016. Inpatients over 18 years of age, who were initiated on IV vancomycin within the period were included. Seventeen patients were audited. Patients suitable for the study were identified by the ward pharmacist who would notify the pre-registration pharmacist of their details. Patients' notes, medication charts and blood results on the Welsh Clinical Portal were used to collect the data.

## RESULTS:

Seventy-one per cent of patients had the IV vancomycin care pathway attached to their chart, a significant difference to the previous audit where no patients had the care pathway attached to their chart. During the re-audit, 77%(13) of patients had their loading dose calculated based on their actual body weight but only 18%(3) of patients had their maintenance doses calculated based on their ideal body weight. Monitoring of vancomycin was below standard with only 53%(8) of patients having their bloods taken on time, yet this was an improvement on the previous audit, where only 22%(2) of patients had their monitoring done on time. Only 24%(4) of patients had their blood level target noted, this was a deterioration since the previous audit where 33%(3) of patients had their blood target noted. Overall, results had improved since 2014, but none of the objectives met the 100% standard set. Out of the seventeen patients, only 29%(5) had correct vancomycin dosing, time of administration and monitoring throughout their treatment.

## DISCUSSION:

Since 2014, the development of Rx Guidelines has allowed the IV vancomycin care pathway to be more accessible. The development of a calculator on Rx Guidelines may facilitate prescribers further. Pharmacist input, through teaching, has improved awareness of the TDM required with vancomycin. Incentives for prescribers e.g. CPD certificates, may encourage participation. In light of the information found within this re-audit, it is recommended that the care pathway clarifies monitoring timing as it is not clear if the loading dose is to be included when counting doses.

## REFERENCES:

1. Joint Formulary Committee. British National Formulary. 72nd ed. London: BMJ Group and Pharmaceutical Press, 2016.

# The Integration of a Clinical Pharmacist into the Admissions Process in Singleton Hospital (A PDSA Cycle)

Ellen Crowley

## FOCAL POINTS:

- A new pharmacy led service in the Singleton admissions unit was developed, involving pharmacists undertaking prospective medication reconciliation on all admitted patients and transcribing drug charts. The aim of which was improving medicines reconciliation accuracy and increasing the pharmacy service reach and impact.
- The average time patients spent waiting prior to pharmacy contact was reduced by 38 minutes, with an average wait of 29 minutes for patients undergoing prospective medicines reconciliation.
- Analysis of data collected relating to medicines reconciliation accuracy revealed that doctors had an average error rate of 42.7% compared to pharmacists' average error rate of 2.6%.
- These results supported the expansion of the service, extending pharmacy contact hours to cover from 9:00 to 20:00, increasing the service reach and creating the potential to impact more patients.

## INTRODUCTION:

The Carter Report acknowledges that the more clinical pharmacists that are integrated into patient facing roles, the better optimised medication use becomes<sup>1</sup>. There is evidence to suggest that early interventions in medicines reconciliation can not only reduce error rates, but reduce the risk of potential harm from medication, which may have resulted in prolonged hospital stays<sup>2</sup>. Pharmacists situated at the point of admission are ideally placed to undertake early medicines reconciliation and clinical screening.

The Singleton Assessment Unit (SAU) is the primary point of admission into the hospital. Based upon analysis of two previous service improvement initiatives of pharmacy services in SAU, a plan was made to implement a new pharmacy led admissions service. This service entailed pharmacy completing prospective medicines reconciliation and transcribing current medication onto patients' drug charts prior to nursing and medical triages. Its aim was to integrate the pharmacy team into the admissions process between the hours of 9:00 and 17:00 to optimise medicines reconciliation, enhancing the impact that pharmacy services can have on patient care and outcomes.

## METHODS:

A data collection form was developed to retrospectively collate data on all patients admitted through SAU. The aim of which was to assess the service reach including proportion of admitted patients who had prospective medicines reconciliation performed by pharmacy, number of patients who had medicines reconciliation performed by doctors, time to pharmacy contact (time admitted vs time seen by pharmacy) and medicines reconciliation accuracy. This data was collected over an 8-day period. With regards to medicines reconciliation, accuracy was investigated through repeating the process using an investigator who was independent to the process to determine any discrepancies.

## RESULTS:

An average of 53% (n:103) of the total admissions (n:193) arrived during pharmacy opening hours (9:00-17:00). Of these patients, pharmacy performed prospective medicines reconciliation on 67% (n:69), equating to only 36% of the total daily admissions. If pharmacy services were extended to 20:00 then the service reach could potentially be increased to around 75% (n:145) of all admissions. The average time patients spent waiting for pharmacy contact was reduced by 38 minutes.

Average time to pharmacy contact	8 hours 22 minutes
Average time to pharmacy contact when prospective medicines reconciliation had taken place	29 minutes
Pharmacist medicines reconciliation error rate	2.6%
Doctors medicines reconciliation error rate	42.7%

## DISCUSSION:

Results demonstrated that the integration of a pharmacist into the admissions process in SAU had a substantial impact with regards to reducing medicines reconciliation error rates, however with the service reach not currently covering enough of the admitted population, the impact is significantly reduced. The data demonstrates a large influx of patients being admitted during the hours of 15:30 and 20:00. If services were to be expanded, then a larger cohort of patients could be impacted and the time spent waiting for pharmacy contact would be greatly reduced.

## REFERENCES:

1. 1000 Lives Campaign. The 'How to Guide' for Improving Medicines Management: Medication Reconciliation. April 2008.
2. Lord Carter of Coles. 'Operational productivity and performance in English NHS acute hospitals: Unwarranted variations'. An independent report for the Department of Health. February 2016

# An Audit of Documentation of Reasons for Stopped Medications on Discharge Advice Letters

Emma Jones

## FOCAL POINTS:

- Discharge advice letters (DALs) sent to GPs during September 2016 were audited to identify whether reasons were consistently documented for medications stopped during admission.
- Of DALs that listed one or more medications as stopped, 41% failed to provide a reason for a least one stopped medication.
- Pharmacists and prescribers are failing to consistently document reasons for medication discontinuation during admission to hospital. Improvements could be made to ensure that primary care providers receive a complete record of any changes to a patient's medication during their time in hospital.

## INTRODUCTION:

Unintentional changes to patients' medications frequently occur when patients move between care settings.<sup>1</sup> Such errors can result in patient harm and readmission to hospital and are entirely avoidable. The Royal Pharmaceutical Society states that health professionals should ensure that all necessary information about a patient's medicines is accurately recorded and transferred with the patient; this includes details of any medication stopped and the reason for discontinuation.<sup>1</sup>

This audit aimed to assess compliance in the health board with the following standard: 100% of discharge advice letters (DALs) should include reasons for any medication stopped during admission.

## METHODS:

Using a database containing details of all DALs sent to GPs via Medicines Transcribing and e-Discharge (MTeD) during September 2016, DALs were located and the medication section read to identify any medicines listed as stopped. DALs were excluded where the patient died during admission. Where stopped medications were present, it was recorded whether a reason was given for each. DALs were deemed as having failed against the audit standard where at least one medication was stopped with no reason given. Where DALs failed it was recorded whether they had been checked on MTeD by a pharmacist. Data was analysed using Microsoft Excel 2007. Ethics approval was not required.

## RESULTS:

Of 1513 DALs, 43% (n=647) listed at least one medication as stopped during admission.

Of these, 41% (n=266) did not meet the audit standard, with at least one stopped medicine with no reason documented.

Of 1577 individual medications listed as stopped, 34% (n=543) did not have a reason documented.

Of 266 failed DALs, 89% (n=236) had been checked on MTeD by a pharmacist.

## DISCUSSION:

Communication of reasons for medication discontinuation on discharge is poor. This increases the risk of medication being inappropriately restarted or withheld. The problem is not limited to prescribers, as the majority of failed DALs had been checked by a pharmacist prior to being sent to the GP. Pharmacists and prescribers may be unaware of their obligation to ensure this information is documented. Further work could determine pharmacist and prescriber awareness of and potential barriers to ensuring effective communication on discharge.

## REFERENCES:

1. Royal Pharmaceutical Society (2012). Keeping patients safe when they transfer between care providers – getting the medicines right.

# An Audit of Antibiotic Prophylaxis Prescribing in Caesarean Sections in Glangwili General Hospital

Emma Todd

## FOCAL POINTS:

- This audit aims to determine whether prescribers at Glangwili General Hospital adhere to Hywel Dda University Health Board antibiotic guidelines when prescribing antibacterial prophylaxis in caesarean section.
- Adherence to guidelines was excellent. The majority of the women received prophylactic antibiotics that adhered to guidelines with regards to choice, dose, route and timing.
- Prescribers need to be encouraged to administer prophylactic antibiotics before skin incision.

## INTRODUCTION:

Antimicrobial Resistance (AMR) is a growing problem. Prescribing in accordance with local antibiotic guidelines can reduce AMR and reduce risks associated with unnecessary treatment<sup>1</sup>. Hywel Dda University Health Board (HDUHB) guidelines for caesarean section recommend a single dose of antibiotics pre-incision. Glangwili General Hospital (GGH) had the highest proportion of surgical prophylaxis prescribed for more than 24 hours in the All Wales Point Prevalence Survey in 2015<sup>2</sup>. Concerns had been raised anecdotally that prescribers were not adhering to guidelines in prophylaxis in obstetric surgery.

## METHODS:

The audit was conducted in December 2016 over a period of 16 days. Ethical approval was not required. All women who underwent a caesarean section on Dymefwr ward were included. Data was collected using a data collection form adapted from Public Health Wales' Antimicrobial Stewardship guidance 'Start Smart - Then Focus'. Inpatient medication charts, anaesthetic cards and patients' medical notes were examined. Adherence to HDUHB guidelines regarding choice, dose, route and timing of prophylactic antibiotic administration was analysed using Microsoft Excel®.

## RESULTS:

A total of 34 caesarean sections were audited between 30/11/16 and 15/12/16. All women (100%) received antibiotics that adhered to HDUHB guidelines with regards to choice, dose and route. HDUHB guidelines recommend that antibiotics are administered pre-incision, which happened in 31 (91%) of the women. For those 31 women, the time between antibiotic administration and skin incision varied greatly, and was between 1 minute and 55 minutes.

## DISCUSSION:

Overall, compliance to HDUHB guidelines for antibiotic prophylaxis in caesarean section was excellent. However, none of the women had a penicillin allergy, therefore compliance to the penicillin allergy option of the guideline could not be assessed. The timing of prophylactic antibiotics in caesarean section was previously recommended to be done after cord clamping. However, the latest NICE guidance states that administration should be done before skin incision. Although there is no recommendation regarding specific timing, it should be considered that antibiotics administered too close to skin incision (within 15 minutes) may not allow for efficient tissue levels to be reached. The recommendation from this audit is to feedback results to the obstetric team and to re-audit in 6-12 months in order to increase awareness of, and encourage prescribing in accordance with, HDUHB antimicrobial guidelines.

## REFERENCES:

1. Public Health England. Start Smart – Then Focus, Antimicrobial Stewardship Toolkit for English Hospitals. 2015. [Accessed 21/03/16] Available from: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/417032/Start\\_Smart\\_Then\\_Focus\\_FINAL.PDF](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/417032/Start_Smart_Then_Focus_FINAL.PDF)
2. Heginbotham, M. and Howe, R. Public Health Wales. Report on Point Prevalence Survey of Antimicrobial Prescribing in Secondary Care in Wales, 2015.

# An Audit to Investigate the Availability of Hypoglycaemic Boxes and the Management of Hypoglycaemic Episodes Across the Hospital

Fabiha Zaman

## **FOCAL POINTS:**

- 1 in 5 diabetic patients had at least one hypoglycaemic episode (hypo) in the last 7 days
- Of the patients who had a hypo, 7 patients (32%) on tablets only and 15 patients (68%) on insulin +/- tablets
- Lack of documentation in medical/nursing notes of hypo
- Hypoglycaemic boxes are not being topped up regularly as appropriate
- Hypoglycaemic episode stickers were not being used

## **INTRODUCTION:**

The management of hypoglycaemia is crucial in the treatment of diabetes. Blood glucose levels should not be lower than 4mmol/L which is classed as hypoglycaemia. There are current guidelines for the health board on the procedure for the management of hypoglycaemia. First line treatment of a hypoglycaemic episode involves 10-20g of glucose as per BNF which the hospital give as a carton of orange juice. Following protocol, this is repeated in 15 minutes if still in hypo. The guidance also goes through clearly when it is appropriate to give glucose gel, IV glucose and IM glucagon.

The hypoglycaemic boxes contain the treatments required to manage a hypo and are available in each ward. It is vital these are easily accessible as well as stocked up for effective management of hypos.

## **METHODS:**

The data was collected across 26 wards in the hospital over a 2 week period in November. Every diabetic patient in these wards were identified and the last 4 hypos recorded within 7 days of identification were recorded. The management in terms of what was given, if the hypo was highlighted in medical/nursing notes, what type of treatment the patient was on and timings of blood glucose measurements were all documented. In each ward, the hypoglycaemic box was checked for contents and any missing items were documented. Due to the nature of the investigation being an audit, ethics approval was not required.

## **RESULTS:**

101 diabetics were identified during the audit with over 1 in 5 of those patients experiencing at least one hypo within the last 7 days of their stay. Of the patients who had a hypo, 7 (32%) were on tablet only regime and 15 (68%) were on insulin +/- tablets. It was found that the treatment for hypoglycaemia did not always adhere to guidelines or were sometimes not documented. The time between checking the glucose levels after a hypo varied from 5 to 790 minutes. 9 out of the 26 hypo boxes were recorded by myself as complete. Many wards stated that the hypo box would normally be topped after use, however, it was noticed that many had at least one item missing. A few items when found to be out of date or about to expire. Some wards kept glucose 50% rather than the 20% listed to be contained. Only half the wards had the hypo guideline readily available to view.

## **DISCUSSION:**

Overall, the management of hypoglycaemia varied between wards with a 20% of patients experiencing a hypo. Guidance was not always followed and this could be due to being unaware of the correct protocol. Treatment and actual hypo were not consistently recorded in notes which is an area that needs to be improved. The hypo box was often incomplete and not stocked up for longer than protocol advises. This could be improved by having a nominated individual to top it up daily. As the hypo sticker was not used, a new instruction label has been implemented which states the sticker to be part of the contents. The findings have been presented to the diabetes nurse team and are have been taken on board.

# Influencing Integration Practice for Service Improvement in Primary Care and Community Settings: A Review on Oral Paracetamol Dosing in Residents Weighing <50kg.

Getrude Fundira

## FOCAL POINTS:

- To assess awareness of weight and paracetamol dose implications in a residential home and whether any weight changes are communicated directly to the GP and updated on the clinical record in a timely manner.
- All weight changes in the residential homes were documented on proforma forms and relayed to a dietician first. GPs, Pharmacists and others were not always informed.
- Overall, there was a grey area in relaying weight changes directly to GP practices in a timely manner resulting in patients <50kg prescribed paracetamol 1g qds.

## INTRODUCTION:

Up to 80% of nursing home residents in Wales suffer from chronic pain and polypharmacy prevalence in the elderly is increasingly common and occurring in primary and secondary care and in care homes. Paracetamol has a well-established safety profile, barely interacts with other treatments and hence is usually first-line analgesia in people with mild to moderate pain. However, potential for severe and sometimes fatal hepatotoxicity is of concern in patients <50kg taking the maximum recommended adult dose of 4g in 24 hours. In 2010 liver failure was reported for two patients who weighed <50kg following the maximum oral paracetamol dose. Whilst reduced body weight alone is not considered a marker for an increased risk of oral paracetamol toxicity, an adult patient weighing <50kg is more likely to have comorbidities which may pre-dispose them to liver damage from paracetamol. Innovation and change are currently seen as an integral part of the NHS, and all healthcare professionals have an increasing responsibility in the delivery of healthcare. This project considered one of the key strategies for effective clinical governance; communication and the Wales Social Services and Well-being Act, 2014; partnership and co-operation drives service delivery to determine better outcomes for residents in nursing homes through collaborative working to achieve shared goals.

## METHODS:

Inclusion criteria:

- Patients <50kg prescribed paracetamol and affiliated to the GP surgery

Over two months, Integrated primary care and community Medicines Use Reviews were conducted at a residential nursing home using a proforma questionnaire to collect data. 'EMis' Patient Medical Record was also used to obtain data from GP Surgery.

## RESULTS:

- Only 35 % of the total residents were affiliated to this specific surgery.
- Of the 35%, 30% weighed <50kg, 10% just over 50kg and 60% >50kg. All were prescribed 1g every 4 to 6 hour when required.
- 95% of the time weight changes were relayed to a dietician first.

## DISCUSSION:

Paracetamol was inappropriately prescribed in 30% of the residents who weighed <50kg. Repeat prescription doses were 'Take 1-2 qds prn, however, MAR charts indicated 1g was given regularly. Weight was recorded on a weekly basis and in the event that a resident's weight loss was noted, a dietician was usually the notified first. In rare cases a fax or telephone call would be made to the GP, however, without any documented follow up.

Limitations included short data collection time due to care home staff workload and my one day per week placement in primary care, a small sample size due to geographic location and not all care homes participating in this project, thus leading to biased results in relation to the main aim.

A shared documented communication policy was suggested and the two sectors (primary care and care home) agreed to explore options in the near future. Primary Care Medicines Management Team agreed to offer annual training on paracetamol and low weight implications to new and current residential staff as required.

## REFERENCES:

1. Duerden, A et al (2013). Polypharmacy and medicines optimisation. London: The Kind's Fund.
2. Welsh Government. (2014). Social Services and Well-being (Wales) Act 2014. Available: <http://gov.wales/topics/health/socialcare/act/?lang=en>. Last accessed 23rd March 2017.

# A Service Improvement of the Medication Ordering System in Care Homes

Grace Grange

## FOCAL POINTS:

- To improve the medication ordering system in care homes and reduce the number of medication related queries by 50%.
- There was a reduction in the average number of queries from 3.7 per month to 2 per month after implementation of ordering schedule.
- Improving communication between sectors and educating staff is likely to have an impact on reducing the number of queries between the care home, GP surgery and community pharmacy.

## INTRODUCTION:

As healthcare has advanced and treatment options have improved, people are living longer and taking more medication to treat a vast number of conditions. Care homes play a crucial role in supporting the older population including the management of medicines. A well organised system and effective communication is vital to prevent errors and to maximise benefit from patient's treatment. A large number of queries have been documented between a care home and community pharmacy relating to medicines management which has highlighted the need to investigate. The service improvement focuses on the process for ordering medication and the communication between the care home, community pharmacy and GP surgery.

## METHODS:

The project involved four PDSA cycles:

**PDSA 1:** The current process for ordering care home medication was mapped and compared with national and local guidelines. The number of queries reported between the care home and community pharmacy was collected.

**PDSA 2:** An ordering schedule stating what should happen each week with regards to the ordering process was implemented in each sector to help improve communication and therefore reduce the number of queries. Staff feedback identified an issue with patients running out of medication before they were due.

**PDSA 3:** The care home medication ward round was shadowed to identify why patients were running out of medication. Data was collected on the number of patients with medication out of synchronisation with the monthly cycle.

**PDSA4:** Prescriptions were provided for the shortfall of medication to bring patients in line with the monthly cycle. An education session with surgery and care home staff was run to prevent reoccurrence of the problem by highlighting the issues identified.

## RESULTS:

- Guidelines relating to the ordering of medication in care homes were adhered to in all sectors.
- There was an average of 3.7 queries per month between April and December 2016 which reduced to 2 per month between January and March 2017 after implementation of ordering schedule.
- An average of 4.7 requests per month was made for medication in advance before the intervention was made.

## DISCUSSION:

There was a reduction in the number of queries after implementation of the ordering schedule and feedback from staff was positive. A major issue was identified with patients running out of medication mainly due to new medication being started half way through the month and losing tablets, resulting in sharing of patient's medication. Prescriptions were provided for the shortfall and GPs asked to provide prescriptions when starting new medication before the next cycle. Staff were educated on the importance of being vigilant, not sharing medication with the aim of reducing the number requests for prescriptions in advance.

Lack of time was a major limitation which meant that it was difficult to prove a correlation between the interventions and the reduction in the number of queries and requests for medication in advance. This will continue to be monitored beyond the deadline of the project. The issues identified in this service improvement are unlikely to be unique to this care home. The issues identified are unlikely to be unique to this care home. These interventions could be implemented in other care homes on a larger scale.

# Standardised Dose Banding of Commonly Prescribed Intravenous Medication to Adult In-patients on ITU.

Gwenan Jones

## FOCAL POINTS:

- The audit investigated whether anaesthetists adhered to the Intensive Care Society (ICS)<sup>1</sup> and National Patient Safety Agency's (NPSA)<sup>2</sup> recommendations regarding the prescribing of specific intravenous (IV) medication.
- It was explored whether the full name of the medication, the concentration, units and diluent were specified on the medication chart.
- 100% adherence to ICS and NPSA's recommendations was not achieved.
- Anaesthetists have agreed to implement ICS and NPSA recommendations in future, and will help to create a pre-printed sticker specifying the nomenclature and concentration of commonly used IV infusion medication on the Intensive Therapy Unit (ITU).

## INTRODUCTION:

It may be preferable to administer medication IV to critically ill patients on ITU. There is a wide variation in infusion practice within ITU's across the UK. Standardising infusion concentrations may lead to a gain in efficiency through the use of common nomenclature across sites and consequence reductions in error rates. The objectives were set to determine whether the full drug name, concentration, units and diluent were specified on the drug chart.

Standards: 100% adherence to:

- ICS recommendations on the IV administration of commonly prescribed medication on ITU<sup>1</sup>.
- NPSA's recommendations on the prescribing of standardised and commercially prepared IV Potassium Chloride solutions<sup>2</sup>.

## METHODS:

A pilot audit was conducted over a one week period. Prescriptions for 20 IV ITU specific medications were reviewed. The pilot audit method, which was implemented in the actual audit proved successful in obtaining the required information. Data was collected prospectively over a three-month period between November 2016 and February 2017. Medication charts pertaining to current in-patients were reviewed once daily on Mondays to Fridays by either the pre-registration or ITU pharmacist. Inclusion Criteria: 1. Adult in-patients aged over 18 years admitted to ITU. 2. IV medication stated in the ICS and NPSA PSA 01 inclusion list. Exclusion criteria: 1. In-patients less than 18 years admitted to ITU. 2. IV medication that is not stated in the ICS and NPSA PSA 01 inclusion list. The Clinical Audit Facilitator confirmed that no ethical approval was required in order to undertake this audit.

## RESULTS:

- 100% adherence to ICS and NPSA recommendations was not achieved.
- Data pertaining to 39 prescriptions for IV medication was obtained.
- The intended drug concentration was specified on 49% of prescriptions; of these, 27% adhered to ICS and NPSA recommendations with regards to concentration.
- Only Fentanyl and Potassium Chloride had concentrations which adhered to the proposed standards. Potassium Chloride had the highest percentage of adherence with 75% (n=3) while Fentanyl had a percentage of 50% (n=1).
- The full name of the medicine prescribed was specified in 62% of cases.
- The diluent was specified on 10% of prescriptions.
- Although Midazolam IV infusion was specified on the ICS inclusions list, only Midazolam Bolus was prescribed during the audit. Therefore, no data was collected with regards to Midazolam IV infusion was obtained.

## DISCUSSION:

- Full adoption of ICS and NPSA recommendations has not yet occurred.
- Anaesthetists have agreed to implement ICS and NPSA recommendations in future where practical and appropriate.
- A pre-printed sticker specifying the nomenclature and concentration of commonly used IV infusion medication with reference to ICS and NPSA recommendations is now under development with support from the anaesthetists.

## REFERENCES:

1. The Intensive Care Society. 'Medication Concentrations in Critical Care Areas'. [http://icmwk.com/wp-content/uploads/2014/02/concentration\\_guidance.pdf](http://icmwk.com/wp-content/uploads/2014/02/concentration_guidance.pdf) Accessed online on 21.8.16.
2. Potassium solutions: risks to patients from errors occurring during intravenous administration. Reference number 1051. Issue date 31 October 2002.

# Adherence of Prescribing and Reviewing Antipsychotic Medicine Use in Dementia Patients to the New Guidelines.

Gwenllian Pugh Jones

## **FOCAL POINTS:**

- To review adherence of prescribing and reviewing antipsychotic medicine use in patients with dementia.
- The use of antipsychotics in dementia patients increases the risk of cerebrovascular events and mortality.
- Out of the 33 patients audited 2 were prescribed antipsychotics, both were prescribed according to guidelines.
- As data was only collected over a 2 week period there is no way to tell whether they carried on being reviewed according to guideline.

## **INTRODUCTION:**

Challenging behaviour such as agitation, vocalisations, verbal and physical aggression and other inappropriate behaviours may occur in up to 90% of people with dementia, collectively these phenomena are described as behavioural and psychological symptoms of dementia (BPSD). Over the past few years there have been increasing concerns over the use of antipsychotics to treat such behaviour. The use of antipsychotics in dementia is associated with increased risk of cerebrovascular adverse events and greater mortality especially in those with pre-existing risk factors. Only in extreme situations where there is considerable risk of harm to oneself or others then it may be appropriate to consider a time limited and symptom targeted approach to using antipsychotics. With the exception of Risperidone in some circumstances there is no antipsychotic licensed in the UK to treat BPSD and therefore prescribed off-label for this purpose.

The Alzheimer's Society designed a guide on appropriate antipsychotic prescribing in dementia; however it doesn't clarify a process for review. The local health board have since released a policy which clarifies responsibilities for prescribing and monitoring of unlicensed use of antipsychotics in dementia patients.

## **METHODS:**

Data was collected at ward level over 2 weeks in February 2017 on forms that had been designed and piloted to ensure appropriateness.

Using pharmacy patient care plans and the butterfly logo scheme patients with dementia were identified.

For all patients identified their drug chart was checked to see whether they were receiving antipsychotics, those receiving antipsychotics looking through their care notes determined whether the appropriate documentation had been completed.

## **RESULTS:**

Out of the 33 patients identified with dementia only 2 were prescribed antipsychotics.

They had both been started within the last 6 months, one in primary care and the other whilst in hospital.

There was evidence that non-pharmacological interventions had been tried for the patient started on Olanzapine in the hospital. The patient on Risperidone was started by a specialist in primary care therefore there was no documentation of non-pharmacological interventions in their care notes.

## **DISCUSSION:**

In both cases where antipsychotics had been prescribed according to guidelines at a low dose. Whilst in hospital they were being reviewed weekly however there is no data on whether they will be carry on being reviewed at appropriate times once discharged.

Limitation: As the 2nd patient was started on an antipsychotic in primary care it wasn't possible to find all the relevant information of whether non-drug interventions had been tried.

Limitation: Past medical history didn't state which kind of dementia a patient had.

## **REFERENCES:**

Alzheimer's Society (2011a) Optimising treatment and care for people with behavioural and psychological symptoms of dementia: A best practice guide for health and social care professionals. Alzheimer's Society, London. (Available from 9 June 2011).

# An Audit Investigating the Documentation of Clinical Monitoring of Patients Prescribed Parenteral Nutrition (PN) at the Royal Glamorgan Hospital and Prince Charles Hospital.

Jade Chan

## FOCAL POINTS:

- To ascertain whether there is documentation of clinical monitoring for patients prescribed PN in Royal Glamorgan Hospital (RGH) and Prince Charles Hospital (PCH).
- To determine if there is a daily pharmacist review for PN documented in patient's medical notes.
- Overall, the majority of the standards were not adhered to and documentation in patient's medical notes was not consistent for RGH and PCH, with PCH having slightly higher percentages of clinical monitoring documented for many of the standards.
- Results suggest that there is a lack of awareness of the importance of documentation in patient's medical notes. An improvement in training should be considered so that there is consistency of PN procedures carried out across both hospital sites to ensure patient safety and effective clinical monitoring is conducted.

## INTRODUCTION:

PN can be associated with many risks as the patients are in a malnourished state, which can make them more vulnerable to complications such as refeeding syndrome and electrolyte disturbances.<sup>1</sup> According to NICE, monitoring of PN should involve parameters such as the patient's overall condition, fluid balance, electrolyte status and treatment goals.<sup>1</sup> The NCEPOD conducted a study titled 'A Mixed bag: An enquiry into the care of hospital patients receiving parenteral nutrition' using questionnaires from hospitals across the UK including the Cwm Taf University Health Board (CTUHB).<sup>2</sup> The NCEPOD report has highlighted that there is poor practice associated with use of PN in clinical settings and a lack of appropriate monitoring carried out with only 19% of adult patients who had received PN care represented good practice.<sup>2</sup> This audit is being conducted to investigate whether multidisciplinary teams at RGH and PCH are documenting clinical monitoring for patients prescribed PN according to standards obtained from NCEPOD and NICE.

## METHODS:

A clinical audit registration form was completed in order to gain approval of the audit, ethics committee approval was not required. A total of 25 patient's medical notes were used during the data collection period with 10 from RGH and 15 from PCH. The inclusion criteria involved adults who had received PN at RGH or PCH. Patient's medical notes were retrieved from the clinical audit office and data collection was carried out retrospectively from 30th November to 8th December 2016 using the data collection form. The 25 patient's medical notes collected had received PN between March to September 2016. One of the standards involving documentation of electrolyte status was obtained using the Welsh Clinical Portal (WCP).

## RESULTS:

For RGH, there was 1/10 (10%) of patient's medical notes, which had a pharmacist review documented in the medical notes and this was not daily. In PCH, 8/15 (53%) of patient's medical notes had a pharmacist review throughout the week but not for every day during the week. 100% of patient's medical notes in RGH and PCH had an indication for PN documented. In PCH, the electrolyte status was monitored on a daily basis until stable in 9/15 (60%) of patients. In comparison, the electrolyte status was monitored daily in 7/10 (70%) of patient's medical notes in RGH.

## DISCUSSION:

The varying results from PCH and RGH suggest that there are factors, which may affect the documentation of clinical monitoring for both the RGH and PCH such as a lack of training and awareness of the importance of documenting clinical monitoring. In addition, CTUHB should consider reviewing their 'Adult PN Procedure' of clinical monitoring and documentation in patient's medical notes to ensure that the responsibility of monitoring and documenting are designated to healthcare professionals. Time constraints with documenting clinical monitoring could be another factor for the differing results between RGH and PCH.

## REFERENCES:

1. National Institute of Clinical Excellence, 2006. Nutrition support for adults: oral nutrition support, enteral tube feeding and parenteral nutrition. Available: <https://www.nice.org.uk/guidance/cg32/chapter/1-guidance#monitoring-of-nutrition-support-in-hospital-and-the-community>.
2. Stewart JAD, et al. National Confidential Enquiry into Patient Outcome and Death, 2010. A Mixed Bag: An enquiry into the care of hospital patients receiving parenteral nutrition, 1-102.

# All Wales Pre-registration Gentamicin Audit

Jagraj Grewal

## FOCAL POINTS:

- Assessing the level of adherence to 1) extended interval gentamicin dosing and 2) therapeutic drug monitoring guidelines
- Gentamicin dosing and TDM often do not adhere to local guidelines, 33% and 0% respectively
- A greater level of adherence to local gentamicin guidelines is necessary to ensure optimal patient care

## INTRODUCTION:

There has been resurgence in the usage of gentamicin across Health Boards and Trusts in Wales. Due to its concentration-dependant activity and sustained post-antibiotic effect gentamicin is highly effective in the empirical/blind treatment of suspected gram negative bacterial infections. However, given its pharmacokinetic profile and numerous adverse effects, regular therapeutic drug monitoring (TDM) is essential with doses commonly being tailored to be patient specific.

At the present time, there are no nationally agreed standards for gentamicin prescribing. However, despite local guidelines suboptimal dosing and monitoring of gentamicin are common occurrences in practice accounting for medication errors resulting in nephrotoxicity, ototoxicity and significant patient harm<sup>1</sup>. Therefore, there is a need to encourage optimal use of gentamicin to promote patient safety. To achieve this, adherence to local Betsi Cadwaladr University Health Board (BCUHB) guidelines was evaluated assessing the adherence to 1) extended interval gentamicin dosing and 2) therapeutic drug monitoring. This was done with the intention of establishing the scope of problems concerning gentamicin and to help inform whether a subsequent co-ordinated national effort to improve prescribing and monitoring is required.

## METHODS:

Medical and surgical wards were included in the audit. Pre-devised data collection forms were used to obtain data relating to patients: weight (kg), height (m) and renal function (eGFR). The following were also collected: gentamicin doses prescribed (mg), dates and times administration occurred and gentamicin levels (mg/L). A majority of such data was obtained with individuals being inpatients however some data was also obtained retrospectively. Ethics committee approval was not required for the purposes of this study.

## RESULTS:

Of the patients assessed for audit suitability, two patients were deemed appropriate. With a total of 6 doses being assessed, 33.33% adhered to local guidelines. The documentation of dates concerning when initial gentamicin levels were due to be taken (n=2) satisfied standards -100%. Documentation of times at which initial levels were taken (n=2) were found to be 0%. Only 50% of the times at which subsequent gentamicin doses were due to be administered were recorded (n=4).

## DISCUSSION:

The results reflect gentamicin dosing and TDM often do not adhere to local guidelines. A proportion of this relates to a miscalculation of doses; doses not always being altered as per ideal body weight (IBW) or adjusted body weight (AJBW). Furthermore a lack of adherence towards local TDM guidelines primarily arises because of poor documentation. This leads to difficulty in healthcare professionals reviewing gentamicin TDM as the times at which levels were taken is poorly documented. This creates further difficulty as specific times for subsequent doses to be administered are challenging to assess.

Moreover the data capture period was conducted over a small period of time; four consecutive weeks. Data was only collected for individuals >18 years old and those prescribed extended interval dosing of gentamicin. Extensive exclusion criteria was also applied to data collection including: multiple daily dosing regimens, patients on intensive care/high dependency units and patients from labour wards/maternity wards. Nonetheless, the audit reflects a greater level of adherence to local gentamicin guidelines is necessary. The scope of adherence levels may be more representative of current practice if a larger data collection period is actioned with the intention of assessing greater numbers of patients prescribed gentamicin.

## REFERENCES:

1. Diasinos N, Baysari M, Kumar S and Day R.O. Does the availability of therapeutic drug monitoring, computerised dose recommendation and prescribing decision support services promote compliance with national gentamicin prescribing guidelines? *Internal Medicine Journal*, 2014; 45(1): 55-62.

# An Audit about Unresolved Medicines on Discharge Advice Letters (DALs)

Jessica Girvin

## FOCAL POINTS:

- Aim: to determine the numbers of unresolved medicines on DALs and why they happen within the health board
- DALs are sent to GPs automatically and are a useful tool for communication between secondary and primary care
- 4.6% of DALs between August and October 2016 included unresolved medicines.
- To improve communication between secondary and primary care further training on MTeD (Medicines Transcription and electronic Discharge) for prescribers and pharmacists is needed and a possibility for all medicines to be resolved before a DAL can be signed by the prescriber could also prove useful.

## INTRODUCTION:

Discharge advice letters (DALs) are generated using MTeD and are automatically sent to the patient's GP. The health board had received feedback that DALs with unresolved medicines were confusing for the GPs. DALs are an integral communication tool between secondary and primary care.

Audit Aim: to determine the numbers of unresolved medicines on DALs and why they happen in UHW and UHL

Standard: 0% of DALs should have unresolved medicines

## METHODS:

Following Health Board ethics approval, a pilot was conducted to produce an appropriate data collection sheet. Using a list of DALs with unresolved medicines dated from 1/8/2016 to 31/10/2016 the DALs data was collected about the ward, length of admission, type of prescriber, whether the pharmacist was the ward pharmacist, number on unresolved medicines, type of medicine, the reason given for being unresolved, whether the GP should continue treatment and the start date of each medicine. The data was analysed using Microsoft Excel.

## RESULTS:

4.6 % (180) of 3951 DALs sent to GPs between August and October 2016 contained unresolved medicines. 71% of the DALs with unresolved medicines were verified (signed off) by a pharmacist. The majority of DALs were verified by a pharmacist during normal working hours. Of the DALs verified by a pharmacist, 38% were verified by the ward pharmacist (the remaining would be pharmacists on the discharge bleep, in the dispensary or out of hours).

Medicines:

70% of the medicines unresolved were regular medicines and 26% were PRN. Approximately 70% of the DALs with unresolved medicines had just one unresolved medicine but ranged from one to fourteen unresolved medicines. There were also a number of unresolved critical medicines: Anticoagulants (3), insulin (2), antibiotics (10).

The average length of stay for patients with unresolved medicines was 9 days, 27% were in hospital for less than three days. The majority of DALs with unresolved medicines were written by junior doctors (F1&F2).

There were various reasons for each medicine but most described medicine reconciliation issues.

## DISCUSSION:

It is difficult to resolve unresolved medicines at discharge if you are not the ward pharmacist and the patient is new to you, this may be part of the reason these DALs were being sent to GPs with unresolved medicines. Unresolved medicines are ultimately the pharmacist's responsibility especially as the majority were related to medicines reconciliation issues.

## RECOMMENDATIONS:

- Make it a requirement that all medicines must be resolved for DALs to be signed off by the prescriber.
- Include unresolved medicines and the importance of communication between secondary and primary care during MTeD training and training of new prescribers, especially junior doctors, to the trust.
- Extra training for MTeD users in the pharmacy department about the appropriate use of the 'reason section' and emphasis on resolving unresolved medicines during admission, including medicine reconciliation discrepancies.
- A protocol should be written to provide consistency to the process of creating DALs
- **Patient care could be enhanced by using DALs appropriately to effectively communicate between secondary and primary care.**

# Just Acute Kidney: A Cross-Sectional Audit Determining Whether Nephrotoxic Medications Are Withheld When an Adult Inpatient Has an Acute Kidney Injury (AKI).

Jessica Reid

## FOCAL POINTS:

- Are nephrotoxic medications withheld when a patient has an Acute Kidney Injury
- 46% of patients required pharmacy intervention, 54% were managed appropriately by doctors
- Improvements could be made through increasing awareness for doctors, pharmacists and patients.

## INTRODUCTION:

Acute Kidney Injury is the sudden loss of kidney function over a period of hours or days exhibited by an increase in serum creatinine and decrease in urine volume. Kidney decline can have a major impact on the patient's clinical condition and medication regime. NICE have estimated that prevention or amelioration of 20% of AKI cases would prevent a large number of mortalities and substantially reduce complications<sup>1</sup>. Objectives of this audit include: 1) Are relevant medications withheld when a patient has an AKI? 2) Is there appropriate documentation for continuing medications? & 3) How often is pharmacy intervention required?

## METHODS:

Standards for withholding medications were obtained from the Health Board's 'Guidelines on Diagnosis and Management of Acute Kidney Injury in Adults'. An automatically generated email was received daily detailing inpatients who had AKI the previous day. A 3 day pilot was conducted to test forms and determine exclusion criteria. AKI inpatients eligible for inclusion had their medication charts checked for prescribed relevant medications. For each medication it was noted whether it had been withheld, and if not was there supporting documentation. Pharmacy intervention was deemed necessary if any medication was not withheld AND not documented. Ethical approval was not required for this audit.

## RESULTS:

Over 2 weeks a total of 126 patients across the hospital had an AKI. Of these patients, 91 were within inclusion criteria and of these 61 (M n=39, S n=22) were on relevant medications.

33% (n=20) of patients required pharmacy intervention due to regular medications. In many cases 'Worsening AKI' or 'Cr' was documented but there was no documentation for continuing nephrotoxic medicines.

13% (n=8) of patients required intervention as they were prescribed opiates only but there was nothing indicating using with caution.

54% (n=33) of patients didn't require pharmacy intervention. Of these patients, 24 had all medications withheld whilst 9 didn't have all medications withheld but reasons why were documented. Reasons included swollen legs, severe hypertension and heart failure. There were 9 patients admitted with AKI, and they were managed appropriately. Number of days between admission and AKI detection ranged 0 – 57 days.

## DISCUSSION:

Results show the management of patients with AKI requires significant improvement. Doctors often detect AKI but more is required in terms of documentation for continuing nephrotoxic medications. Although there were fewer surgical patients with AKI, results show interventions were required in a higher percentage of patients although more data is required for a direct comparison. The confusion and respiratory depression that may occur in patients on opiates may be significant and guidelines could be updated to include pain management in AKI. This audit allowed clinical pharmacists to be updated daily regarding which of their patients had AKIs. Some pharmacists felt that not all patients' AKIs may have been detected within 24 hours if it wasn't for this audit. A daily list of AKI patients should therefore be accessible to all pharmacists. This audit has developed questions on whether patients and their GPs are made aware of previous AKI's on discharge and are they educated on future prevention. An audit follow up will review if withheld medications are restarted on discharge and GPs made aware of patients' AKI. There may be future opportunities for education of the patient by a pharmacist on discharge, as well as providing 'sick day rules' cards<sup>2</sup> in order to prevent re-admission due to AKI.

## REFERENCES:

1. National Institute for Health and Care Excellence. NICE Clinical Guideline 169. London: NICE; 2013. Acute Kidney Injury. Prevention, detection and management. Online – last accessed 17/03/17 at: <https://www.nice.org.uk/guidance/cg169>
2. Scottish Patient Safety Programme, NHS Scotland 2017. Medicines Sick Day Rules Card. Online – last accessed 17/03/17 at: <http://www.scottishpatientsafetyprogramme.scot.nhs.uk/programmes/primary-care/medicine-sick-day-rules-card>

# An Audit of Co-amoxiclav Prescribing at Glangwili General Hospital

Joshua Davies

## INTRODUCTION:

Around 20-50% of all antimicrobial use is inappropriate, thus leading to increased rates of *Clostridium Difficile* associated disease and resistant bacteria<sup>1</sup>. The World Health Organisation has reported that the issue of antibiotic resistance is one of the greatest threats to healthcare today and appropriate use is needed to ensure that they remain effective<sup>2</sup>. Glangwili General Hospital (GGH) is one of the highest users of antimicrobials in Wales and the highest user of the broad spectrum -lactam/ -lactamase inhibitor, co-amoxiclav<sup>1</sup>. Co-amoxiclav is a broad spectrum antibiotic which when inappropriately used has been linked to an increased incidence of antibiotic resistance and *Clostridium Difficile* associated disease (CDAD). An audit was undertaken to assess whether or not co-amoxiclav was being prescribed in line with the HDUHB antibiotic empirical guidelines at GGH.

## OBJECTIVES:

To primarily assess the quality of prescribing with regards to co-amoxiclav at GGH through reviewing whether or not prescriptions were in line with the Health Board's guidelines. The audit will determine the indications co-amoxiclav was most commonly prescribed. For community acquired pneumonia (CAP), the audit will look at whether the patient's CURB-65 score was documented.

## METHOD:

The audit was undertaken over a two week period in November and December 2016 on all 17 inpatient wards at GGH, excluding paediatric wards. The information was gathered from inpatient charts, medical notes and, when appropriate, Myrddin®, the data was then analysed using Microsoft Excel®. Patients who were prescribed a co-amoxiclav in renal impairment were also included within the audit.

## RESULTS:

Out of a 117 patients 29 patients (24.7%) had no clear indication as to why the patient was being treated with co-amoxiclav and 6 of patients (5.1%) were prescribed for an indication that was not covered by the HDUHB guidelines. A further 2 of patients (1.7%) had justifiable and documented reasons for not following guidelines. For the remaining 80 patients, 22 (27.5%) were prescribed co-amoxiclav for an appropriate indication. Out of the 22 which were prescribed co-amoxiclav appropriately, 5 patients had the correct duration documented, 13 had no duration documented on either the inpatient chart or the medical notes and four of the 22 had a duration documented that was not line with the HDUHB guidelines. Of the 13 patients who were prescribed co-amoxiclav for CAP, none had a CURB-65 score documented, thus the appropriateness of co-amoxiclav for these patients could not be assessed.

## DISCUSSION:

Compliance rate with the guidelines was very poor as was the documentation of indication and review dates or duration of treatment. Documentation of CURB-65 scores for patients diagnosed with CAP was also very poor. Out of those inappropriately prescribed co-amoxiclav, some patients were treated for an urinary tract infection and some patients were treated for a lower respiratory tract infection, for both indications, co-amoxiclav is not present in the HDUHB guidelines.

## RECOMMENDATIONS:

Due to the poor compliance to HDUHB guidelines, there are several recommendations to try and improve the quality of prescribing at GGH. Current initiatives such as 'Start Smart Then Focus' must be highlighted and promoted. Following presenting the data to prescribers, there must be further education on the appropriateness of certain antibiotics, the guidelines and the importance of documenting treatment duration or CURB-65 scores for CAP patients. Following this, the audit must be re-audited to assess whether there has been an improvement in the quality of prescribing at GGH. The HDUHB guidelines must also be reviewed regularly and to possibly restrict the usage of co-amoxiclav as some other hospital sites around Wales has done.

## REFERENCES:

1. Organisation, World Health. 2016. "Antibiotic Resistance." Accessed 23-3-17, 2017. <http://www.who.int/mediacentre/factsheets/antibiotic-resistance/en/>.
2. Microbiology Division. 2016. Antimicrobial Usage in Secondary Care in Wales 2006-2015, by Wales, Public Health.

# Intervention Given to Patients During Dispensing of Antibiotics

Karen Mahy

## FOCAL POINTS:

- This audit aims to identify barriers to the counselling of antibiotics and discuss ways to overcome these.
- Results initially showed that only basic information was given when handing antibiotics to a patient
- With discussion simple process can be put in place to provide the most effective counselling possible and improve patient care.

## INTRODUCTION:

Antibiotic resistance is a major health issue. On 27th February 2017, the World Health Organisation (WHO) published its first list of bacteria families resistant to multiple treatments that are currently available<sup>1</sup>.

The principle idea of the list is to encourage research and development into treatment against these bacteria. Alongside this though, further education of the general public is required to ensure effective use of existing treatments against non-resistant bacteria, and prevention of resistance to any new drugs that emerge. This can be done when dispensing prescriptions to patients within community pharmacy.

## METHODS:

Data was collected from the first 10 patients presenting prescriptions for antibiotics during two separate weeks. Counselling on the following points was monitored:

- Importance of completing the course
- When to expect improvement of symptoms
- How antimicrobial resistance develops
- How to manage symptoms with over the counter medication
- Importance of storage
- Importance of returning unused medication

As a pharmacy team we discussed barriers to providing effective counselling and ways of overcoming these in between the first and second data collection weeks.

Prior to starting the second round of data collection we drew up a list of suggested approaches to counselling and displayed them next to the counter as a reminder when handing prescriptions out.

## RESULTS:

On reviewing Survey 1 it became apparent that we consistently advised to complete the course of medication (100% patients monitored) and, unless there were specific storage requirements (i.e. fridge) or the patient asked for further advice on symptoms, this was the only information given. Barriers to providing further counselling were determined as time, staff knowledge, patient knowledge and not the patient collecting.

By drawing up 3 short sentences to guide the conversation we were able to easily add in counselling around symptom duration and bacterial resistance (increased from 0% in Survey 1 to 100% in Survey 2). Although all customers were asked about their need to manage symptoms none required further advice in Survey 2 and there were also no items dispensed that required specific storage information to be given.

## DISCUSSION:

Limitations of this study include small sample size, short time period of data collection and single location observed. Despite this it shows that sometimes limited counselling is given when handing out scripts.

Some people are aware of the threat of bacterial resistance but don't have an in depth knowledge about it. It is therefore important to stress the need to complete the course, and advise why it would be harmful to stop taking the medication early to try and increase patient understanding and in turn compliance.

## REFERENCES:

1. World Health Organisation (2017) WHO publishes list of bacteria for which new antibiotics are urgently needed. <http://www.who.int/mediacentre/news/releases/2017/bacteria-antibiotics-needed/en/> [Accessed 8 March 2017]

# Audit of the Prescribing of Tramadol for the Management of Moderate to Severe Pain within RG Hospital

Karlie Williams

## FOCAL POINTS:

- The purpose of the audit was to assess the clinical suitability of tramadol prescribing within RG Hospital when compared to Health Board and national guidance regarding tramadol.
- 100% of newly prescribed tramadol was deemed clinically inappropriate for the patient as per health board and national guidance.
- Re-education of staff members – prescribers and pharmacists - is required to reduce inappropriate prescribing of tramadol in the future.

## INTRODUCTION:

Tramadol is a schedule 3 controlled drug licensed for the treatment of moderate to severe pain. Deaths involving tramadol hit an all time high of 240 deaths in 2014<sup>1</sup> Though the number of prescriptions for tramadol dispensed in community fell by 5% between 2014 and 2015<sup>1</sup> Therefore, prescribing habits within secondary care should reflect the good work already carried out by primary care to reduce the prescribing of tramadol for regular opioid therapy.

## METHODS:

Ethics committee approval was obtained for this audit.

The audit was carried out on two surgical and two medical wards within RG Hospital (RGH).

Inclusion criteria:

- All adult in-patients on wards 1, 2, 12 and 14 of RGH medical and surgical wards during the data collection period.

A data collection form was designed and a one-week pilot was carried out prior to a two-week data collection period between January 9th and January 20th. Data was collected using patients' medication charts, patient notes and the tramadol controlled drugs register kept within the dispensary of RGH. Data was collated and analysed using Microsoft Excel.

## RESULTS:

- 100% of RGH in-patient prescriptions for tramadol were clinically inappropriate as per RGH and national guidelines.
- 26% of those patients newly prescribed tramadol as in-patients' were also written up for tramadol to take home with them on discharge.
- 9% of inappropriately prescribed tramadol was challenged by a pharmacist.

## DISCUSSION:

The prescribing of tramadol is a significant issue and needs to be addressed by education of staff including: -

Prescribers: ensure that they are aware and educated on current guidelines and advise them to prescribe appropriately.

Pharmacists: ensure that all pharmacists are aware of the pain guidelines within CTUHB and encourage them to monitor and challenge the prescribing of tramadol where appropriate.

It is recommended that CTUHB secondary care pain guidelines are amended to include tramadol as only an option if a patient is allergic to codeine or morphine, rather than simply omitting it from its guidelines. This revision and re-education of prescribers and pharmacists could reduce confusion with regards to tramadol's place within acute pain management. Re-auditing in 12 months' time after guideline amendment and staff training is recommended to evaluate if improvements have been made.

## REFERENCES:

1. Office for National Statistics. Statistical bulletin: Deaths Related to Drug Poisoning in England and Wales, 2012. 2013. Available at: <https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/deathsrelatedtodrugpoisoninginenglandandwales/2015registrations>. Accessed Feb 2017.

# Relvar Ellipta 184/22: Analysis of Appropriate Prescribing.

Kate Bevan

## FOCAL POINTS:

- An audit investigating the appropriate prescribing of Relvar Ellipta 184/22 microgram (184 micrograms of fluticasone furoate and 22 micrograms of vilanterol) combination inhalers.
- The aim of the audit was to investigate whether high dose Relvar Ellipta inhalers were being prescribed in accordance with their licensing and National Institute for Health and Care Excellence (NICE) guidelines.
- Results showed that of 53 patients, 45% of patients were deemed unsuitable for Relvar 184/22. The audit found that 57% of patients analysed required referral to their GP in relation to their treatment.
- It is not clear that standards have been communicated to prescribers; therefore clear guidance could improve practice – resulting in less cost to the NHS and a reduced risk of adverse effects.

## INTRODUCTION:

Relvar Ellipta is a combination inhaler containing two active substances; fluticasone furoate (an inhaled corticosteroid [ICS]) and vilanterol (a long-acting beta-2 agonist [LABA]). The British Thoracic Society suggest the addition of a LABA with ICS at Step 3 of Asthma Guidelines, and increasing ICS up to 2000 microgram daily as Step 4.

Two strengths of Relvar Ellipta inhalers are available; 92/22 microgram (Step 3) and the higher strength 184/22 microgram (Step 4). Both are licensed for the once daily treatment of asthma where a combination product is deemed appropriate. However, Relvar Ellipta 184/22 microgram is **not** licensed for the treatment of COPD, as studies demonstrated no improvement over the reduced strength 92/22 microgram inhaler in improving incidence of exacerbations.

Systemic effects may occur with any ICS, particularly at high doses over long periods. Patients are therefore at increased risk of adverse effects when treated with the higher strength ICS/LABA combination. In addition, NICE guidelines state that the least costly product that is suitable for an individual should be used. The Relvar Ellipta 184/22 is £11.07 more costly than the 92/22 microgram inhaler for 30 days of treatment.

To ensure safe and cost-effective prescribing, it is important that patients are appropriately prescribed Relvar 184/22 based on evidence-based guidelines and licensing. This audit aims to analyse appropriate prescribing against set standards, in patients undergoing treatment in primary and secondary care settings.

## METHODS:

Data collection forms were designed and piloted. Data was collected retrospectively between 02.03.17 and 09.03.17 using EMIS software and patient notes at three GP practices within a local Health Board. Eligible patients were identified by creating search criteria to include those who were currently undergoing treatment with Relvar Ellipta 184/22 microgram inhalers. Standards were set based on NICE guidance and licensing information.

## RESULTS:

Results showed that of 53 patients, 23% were prescribed Relvar Ellipta 184/22 microgram for the unlicensed treatment of COPD. Overall 62% of prescriptions were initiated by respiratory nurses within GP practices, 25% were initiated by GPs and the remaining 13% were prescribed within secondary care. Based on standards of patient suitability, 45% of patients were deemed unsuitable for treatment with the high strength inhaler. 57% of patients required referral to their GP in relation to treatment, often as a result of a failure to arrange follow-up treatment reviews.

## DISCUSSION:

The audit demonstrates that there is a lack of understanding of the appropriate prescribing of Relvar Ellipta 184/22 microgram inhalers. A significant amount of patients were determined to be unsuitable for this treatment, and could have benefited equally from treatment with a reduced strength combination inhaler. They were subsequently found to be at increased risk of adverse effects, and are potentially undergoing a more costly treatment than is necessary. In order to fully understand the rationale behind inappropriate prescribing, further investigation is needed. This research should take into account that the majority group prescribing the medication were found to be respiratory nurses within GP practices. Education and training into evidence-based guidelines and licensing standards are key to ensure safe and cost-effective supply of medication, at a time where prudent healthcare is imperative to the National Health Service.

## REFERENCES:

1. National Institute for Health and Care Excellence, NICE (2014). Asthma: fluticasone furoate/vilanterol (Relvar Ellipta) combination inhaler. Available: <https://www.nice.org.uk/advice/esnm34/chapter/key-points-from-the-evidence>. Last accessed 23rd March 2017.
2. European Medicines Agency (2013). EPAR summary for the public: Relvar Ellipta. Available: [http://www.ema.europa.eu/docs/en\\_GB/document\\_library/EPAR\\_-\\_Summary\\_for\\_the\\_public/human/002673/WC500157636.pdf](http://www.ema.europa.eu/docs/en_GB/document_library/EPAR_-_Summary_for_the_public/human/002673/WC500157636.pdf). Last accessed 20th March 2017.

# Audit into the Nutritional Requirements, Risk of Refeeding Syndrome and Composition of Parenteral Nutrition (PN) Given to Adult Patients Initiated on PN

Katie Oakes

## FOCAL POINTS:

- Are patient's needs and refeeding risks being assessed as set out by the NICE clinical guideline 32 (CG32)<sup>1</sup> standards and are the PN bags they are receiving appropriate?
- 55% (n=11/20) of patients were at risk of refeeding as per NICE CG32<sup>1</sup>
- 64% (n=7/11) these started on full nutritional requirements.
- Patients that required bespoke compounded PN bags required additional potassium supplementation.
- Patients should be assessed for refeeding risk and standard PN bags stocked should reflect demand.

## INTRODUCTION:

For audit purposes, patients initiated on PN had the following assessed:

Indication for PN	Past medical history	Refeeding risk factors
Nutritional requirements	Type of PN bags supplied	Switch to bespoke bags

This established how frequently patients were at risk of refeeding whether they were supplied appropriate PN and why they were supplied bespoke bags if necessary. Refeeding is a syndrome of metabolic disturbances which is the consequence of providing nutrition to a malnourished individual; this may result in deranged electrolytes and fluid overload. This information will influence the range of PN bags stocked in the hospital to ensure that patient's nutritional needs are being appropriately met.

## METHODS:

A data collection form was completed for each patient that was initiated on PN between 07/11/16-23/01/17. Patients were identified using the PN batch logs and data was collected using the patient's charts, notes and speaking to them. Patient's refeeding risk was established using the NICE CG32<sup>1</sup>. Nutritional requirements were estimated using the Henry equations<sup>2</sup>. Ethics committee approval was obtained.

## RESULTS:

- 55% of patients (n=11/20) were at risk of refeeding syndrome mainly due to poor nutritional status or inadequate biochemistry and 64% of these patients (n=7/11) started on full nutritional requirements.
- 10% of patients (n=2/20) required bespoke bags with higher potassium supplementation.
- 50% of patients (n=10/20) had inadequate serum magnesium levels prior to PN.
- The most commonly used bag was SMOFven11 and the mean nutritional requirement of these patients is 1,909kcal.
- 50% of patients (n=10/20) had little to no nutritional intake for >5 days and 80% of these patients (n=8/10) did not start on 50% of their energy needs as indicated by the NICE CG32<sup>1</sup>.

## DISCUSSION:

Results suggest that according to NICE CG32<sup>1</sup> the risk of refeeding syndrome needs to be assessed more carefully and low levels of serum potassium, phosphate and magnesium should be closely monitored. It is important to note that although 55% of patients were at risk of refeeding and 64% of those at risk received full nutrition no patients developed refeeding syndrome. This suggests the refeeding risk assessment or NICE CG32<sup>1</sup> guidance may be over cautious or the sample size may have been too small. As the mean nutritional requirements of the patient group loosely matched approximate calorie content of SMOFven11 and only 10% required bespoke bags, this would suggest it is an appropriate choice for most patients. Therefore, the current PN bags stocked in the hospital do reflect the requirements of most patients excluding the need for additional potassium supplementation for some individuals.

## REFERENCES:

1. National Institute for Health and Care Excellence (NICE). Nutrition support for adults: oral nutrition support, enteral tube feeding and parenteral nutrition. NICE Clinical Guidance 32 [CG32]. 2006.
2. Henry, CJK. Basal metabolic rate studies in humans: measurement and development of new equations. Public Health Nutr, 2005, 8(7A), 1133-1152.

# Assessing the Extent of Anticholinergic Burden Risk in Older Patient Populations

Liam Clayton

## FOCAL POINTS:

- **Objective:** To assess the level of anticholinergic burden risk in patients over 70 years of age, and refer to GP or practice pharmacist accordingly if deemed clinically necessary.
- **Methods:** Pharmacist awareness tested by interview, criteria for patient reviews defined, reviews carried out.
- **Main results:** Of five patients reviewed, four patients did not list any particular incidence of side effects or memory problems, one patient had notable issues and was referred.
- **Main conclusion:** 1 in 5 patients showing adverse effects could indicate large potential benefit from this work, however more patients need to be reviewed for the data to reflect risk noted in literature. Future work could incorporate younger patients (65+) and routine reviewing.

## INTRODUCTION:

The subject of anticholinergic burden was presented in the All Wales Medicines Strategy Group publication on Polypharmacy<sup>1</sup>, referencing a number of studies linking anticholinergic use in the elderly with increased incidence of adverse effects and an increased risk of cognitive decline and dementia symptoms. A list of drugs is presented in this document scoring different anticholinergic drugs according to their relative additive risk, with scores ranging from 1 for the lowest and 3 for the highest risk drugs. This document was the basis for undertaking this project.

## METHODS:

Pharmacists in primary care and community settings were interviewed for awareness of the issue of anticholinergic burden, revealing that the issue is relatively unknown and unaddressed in routine MURs and other reviews. A document with questions relating to anticholinergic side effects and cognitive decline was formulated and piloted among three pharmacists, then edited to a final version for use in reviews. Based on evidence referenced by AWMSG and a 2014 Scottish study<sup>2</sup>, the age for review focus was set at 70+ years, and the AWMSG drug scoring edited to reflect the newer Scottish data. Database searches of patients using regular amounts of the highest risk drugs (scored 3 out of 3) and aged above 70 were carried out in community and primary care settings. These patients were then contacted and invited for a review by a pharmacist utilising the agreed document. Patients showing signs of cognitive decline, or experiencing significant anticholinergic side effects, should be referred to the GP to review their continued use of the anticholinergic drug(s).

## RESULTS:

Five patients were reviewed over the 2-month period of data collection. Four were reviewed in formal face to face MURs, and one was reviewed by asking the anticholinergic review questions over the phone. All patients used amitriptyline, one additionally used ranitidine. Four patients noted no anticholinergic side effects or signs of cognitive decline, with one requesting an increased dose. One patient had dry eyes and balance issues that had worsened since being on amitriptyline, and felt no benefit from the drug, and so was referred to the GP with a view to stop the medication.

## DISCUSSION:

These results are positive as they show that there are patients in this age group using these medications who are suffering adverse effects. The number reviewed in two months was very low due to patients being unwilling or unable to attend a review, and so more patients in need of referral could be accessed by making these questions a routine part of any review with a patient fitting the criteria. The age range minimum could be lowered to 65 for greater sample sizes and if the 1 to 5 ratio of patients suffering adverse effects seen in this initial work remained the same in future work, a larger sample size reviewed could have enormous potential benefit.

## REFERENCES:

1. AWMSG Polypharmacy Guidance for Prescribing, available at: [www.awmsg.org](http://www.awmsg.org)
2. Age Ageing. 2014 Jul;43(4):515-21. doi: 10.1093/ageing/aft199. Epub 2013 Dec 10. Temporal trends in anticholinergic medication prescription in older people: repeated cross-sectional analysis of population prescribing data.

# All Wales Gentamicin Audit

Lucy Morgan

## FOCAL POINTS:

- To assess the level of adherence to extended interval (EI) gentamicin dosing and therapeutic drug monitoring guidelines in Welsh hospitals
- All Wales average of compliant dosing 48% compared with just 37% in this hospital
- More work needs to be done within the health board to improve gentamicin prescribing using gentamicin charts

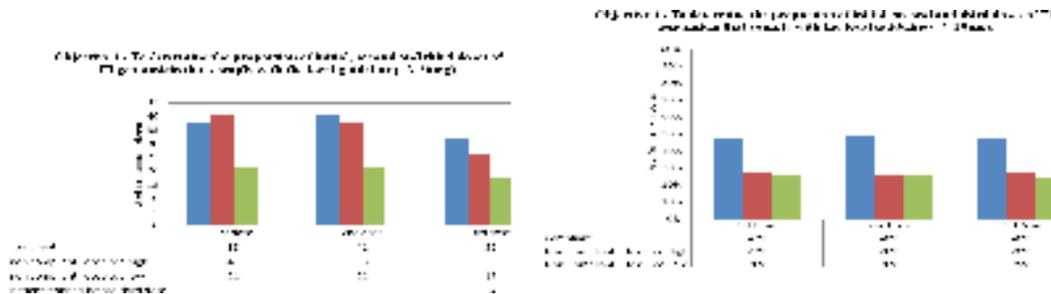
## INTRODUCTION:

Gentamicin is commonly used in health boards across Wales to treat gram negative bacterial infections. Each trust has its own local guidelines as gentamicin requires tailored dosing and regular therapeutic drug monitoring. Despite having these guidelines dosing of gentamicin is a common error and patients can come to significant harm including having nephrotoxicity and ototoxicity. Patients are often sub optimally dosed and there is a lack of adherence to the guidelines set out in each health board. The three main objectives were; to determine the proportion of initial, second and third doses of EI gentamicin that comply with the local guideline (+/- 20mg); to determine the proportion of initial serum EI gentamicin levels that were taken within the time frame specified by the local guideline and to determine the proportion of EI gentamicin doses following the first mandated gentamicin level that are prescribed to be given at the correct time.

## METHODS:

Data was collected for all adult inpatients started on gentamicin during four consecutive weeks. There were also a number of exclusion criteria. Pharmacists helped identify patients who were receiving EI gentamicin and the following patient data was collected; hospital number, date of birth, age, gender, serum creatinine and creatinine clearance. The patient's ideal body weight and/or adjusted body weight were then calculated. The initial, second and third dose of gentamicin were recorded and assessed to see if they fell within local guidelines (+/- 20mg). Ideally the dosing intervals were recorded (preferably with specific times – however this was not possible and the timing was only recorded as either morning, midday, evening or night). The time that the gentamicin serum level was due to be taken was documented (between the second and third dose) and the outcome documented. Ethical approval was not required for this audit.

## RESULTS:



## REFERENCES:

Figure 1 and 2 show Proportion of 1st, 2nd and 3rd EI gentamicin doses that comply with local guidelines (%) –this hospital v All Wales data

## DISCUSSION:

From comparing the data to that of the All Wales data, it can be seen that this hospital performs worse than the All Wales data. Only 37% of the gentamicin charts over the four week collection period were correctly prescribed compared with 48% for the All Wales data. Data for objectives 2 and 3 were hard to show graphically as nurses do not chart the times they give the gentamicin doses here. There are gentamicin charts available for this health board that allow the times of the gentamicin to be accurately recorded with spaces to write in the serum creatinine and the time the blood was taken for the level. There is information regarding how to calculate the ideal or adjusted body weight and how to administer gentamicin. Encouraging the use of these charts within the hospital would allow better prescribing of gentamicin. To help this goal become realistic pharmacists will be informed of the audit results and they will be asked to help encourage the use of the charts. A poster that can go up in the doctors' room on the wards will be made to remind them to use the charts and the use of the charts will be spoken about in meetings to raise awareness. The nurses also need to be compliant with the charts and therefore a meeting will be held with them to show them the new charts to be used.

# Assessing the Adherence of Dosing and Monitoring of Extended Interval Gentamicin to Local Guidelines in Hospitals in Wales.

Natalie Renwick

## FOCAL POINTS:

- To assess the adherence of extended interval gentamicin dosing and TDM guidelines within Wales.
- There was variable adherence within Wales to initial dosages given to patients with 110 patients out of 235 being given the correct initial dose but only 101 patients of the 235 having serum levels taken correctly.
- Correct first doses in Wales had an average of 47%, showing that for the majority of the time the initial dosing is incorrect but the use of the gentamicin calculator could reduce this error for more accurate dosage prescribing.

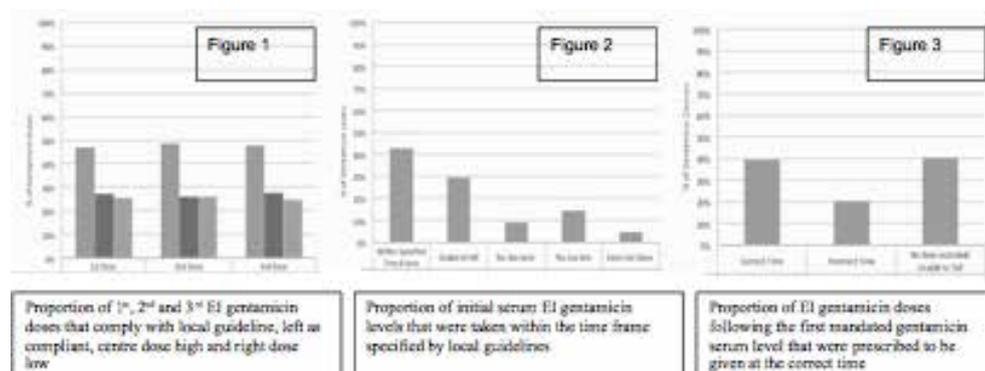
## INTRODUCTION:

Gentamicin is the aminoglycoside of choice in the UK and is widely used for the treatment of serious infections. There has been a recent resurgence in the use of gentamicin for the treatment of gram-negative bacterial infections (BNF, 2017). However, due to its narrow therapeutic index and ability to cause ototoxicity and nephrotoxicity it requires close monitoring throughout treatment. The aim of the audit was to assess the level of adherence to local extended interval (EI) gentamicin dosing and TDM guidelines and compare results on an all Wales basis.

## METHODS:

- Audit approval was sent to the Health Board lead for the audit to commence but ethics approval was not needed.
- Data was collected for all adult inpatients (>18yrs) by a single auditor over 4 consecutive weeks in October 2016.
- An All-Wales Data Collective form was used to collect data from medical notes, charts and Welsh Clinical Portal.
- Patients were identified by asking ward pharmacists to refer suitable patients and through a daily automated email by Laboratory Management System that contained patient details and gentamicin levels for patients who had received therapeutic drug monitoring on the previous day.
- Results were compiled into a Microsoft Excel spreadsheet and transferred to the audit lead for analysis.

## RESULTS:



## DISCUSSION:

Gentamicin relies heavily on monitoring in order to achieve the maximum benefit from treatment, but also to avoid significant side effects. With 80% of patient's weight being recorded but 0% of patient's height it shows that limited doses were adjusted for obese patients causing incorrect dosages. Therefore, the gentamicin calculator should be made more readily available, so that ideal body weight is used automatically, instead of the standard 5mg/kg dosing. Despite 80% of levels being recorded correctly, only 25% of second doses prescribed were in accordance with guidelines. Showing that when a high level returns there is limited knowledge on how adapting the dose to benefit the patient. For the majority of patients whose level returned high it took a couple of days for a dose reduction, rather than omitting a dose or reducing a dose immediately. Showing that there is limited knowledge and pharmacy need to take a step forward in the care of patients with gentamicin prescribed in order to prevent high levels reoccurring. By teaching doctors when to hold gentamicin doses and when to reduce them we can increase patient safety. The All Wales Audit has shown the current limitations of this treatment but also how to improve to obtain the standards of 100% dosing and serum levels obtained correctly.

## REFERENCES:

Committee, J.F., 2017, British National Formulary: Edition 72, London: BMJ Group and Pharmaceutical Press.

# An Audit to Establish the Compliance of Prescribing and Monitoring Gentamicin to Local Guidelines.

Non Edmunds

## **FOCAL POINTS:**

- An audit was conducted to establish the compliance of the prescribing and monitoring of extended interval gentamicin as per the local guideline.
- Results showed that compliance was low where only 41% of doses were prescribed correctly and only 9% of serum gentamicin levels could be determined as being taken at the correct time.
- Both the prescribing and monitoring of gentamicin needs to be improved by better documentation and education of the local guidelines, and highlighting the importance of complying with them.

## **INTRODUCTION:**

Gentamicin is an aminoglycoside antibiotic which is often used empirically where gram negative infections are suspected. Due to its side effect profile and narrow therapeutic window, the dosing and monitoring of gentamicin needs to be executed thoroughly. How gentamicin is dosed and monitored is determined by a specific guideline which is different in various health boards and this may pose a problem when prescribers calculate the dose and decide the monitoring interval. The aim of the audit was to measure the level of compliance in following the local guidelines on the dosing and monitoring of extended interval (EI) gentamicin.

### Standards:

- 100% of first, second and third doses of EI gentamicin must be prescribed as stated in the local guideline.
- 100% first EI serum gentamicin levels must be taken at the right time as stated in the local guideline.
- 100% of EI gentamicin doses following the analysis of the first authorised gentamicin serum level must be prescribed to be administered at the right time as stated in the local guideline.

## **METHODS:**

A sample of inpatients 18 years old and above initiated on EI gentamicin were followed for four consecutive weeks. The first three doses administered to patients and the first serum gentamicin level were analysed to see whether they complied with the hospital guidelines. Results were collected by a pre-registration student and recorded on a standardised form then entered into a Microsoft Excel® spreadsheet to be analysed. Ethics committee approval was not required for the audit.

## **RESULTS:**

A total of 33 patients were included in the audit with 95 doses being administered. Of those doses, only 39 (41%) were dosed correctly. Of the 33 patients, only 3 levels were taken on time (9%), 7 (21%) were taken too early, 7 (21%) were taken too late and 5 (15%) levels were not needed. It was unable to be determined whether 11 (33%) levels were taken on time. Of the gentamicin levels taken between the first and second dose or the second and third dose, 2 (12%) were not prescribed their subsequent dose correctly and 15 (88%) had no time recorded.

## **DISCUSSION:**

Incorrect monitoring and dosing of gentamicin can lead to inappropriate management of infections and an increased risk of toxicity if levels are too high. A chart should be used for each patient which includes the guidelines and all necessary information needed to calculate the dose and frequency, and ensure serum levels are taken on time. Prescribers also need to be educated on the local guidelines on how to use them accurately.

One of the main limitations in the audit included not analysing the fourth dose, which would have given a more accurate indication of whether patients were receiving correct doses following the first gentamicin level. This is because local policy states the level should be taken immediately before the third dose meaning it is sometimes not possible to alter the third dose if the level is high.

# High Dose Antipsychotic Prescribing in the Community Setting.

Richard Evans

## FOCAL POINTS:

- This audit assesses the prescribing of high dose antipsychotics (HDAP) in a community setting, and the adherence to monitoring and documentation requirements specified in the ABMU HDAP policy.
- 5.6% of patients were prescribed HDAP, polypharmacy was the main cause, only 21.7% of patients had a reason for HDAP documented in case notes, and appropriate monitoring was not documented in many cases.
- Overall, HDAP rates are low, however improvements in monitoring and documentation are required.

## INTRODUCTION:

Antipsychotics are used in the management of schizophrenia and other mental health conditions. Current guidelines suggest that antipsychotic doses should be within British National Formulary (BNF) limits, and no more than one regular antipsychotic should be routinely prescribed at a time<sup>1</sup>. There is limited evidence on the benefits of HDAP or prescribing more than one regular antipsychotic. HDAP results in an increased incidence of side effects including postural hypotension, sedation, QT prolongation and sudden cardiac death. The risk of high dose antipsychotic prescribing therefore usually outweighs its benefits<sup>2</sup>.

Audit Standards	Target
Patients should not routinely be on high dose antipsychotics unless necessary	≤10%
Reasons for HDAP should be clearly documented	100%
HDAP forms completed (as per policy)	100%
Monitoring of ECG, LFTs, U&Es and prolactin levels at baseline and every 3 months after	100%

## METHODS:

A community mental health team (CMHT) was visited to view patient notes and gain the required information for this audit. Patients on HDAP were calculated using a calculating tool produced by the Prescribing Observatory for Mental Health (POMH-UK) and all relevant information was collated. This information was analysed using Microsoft Excel®. Ethics committee approval was not needed.

## RESULTS:

Around 250 patients were included in the case load for the audit, and 5.6% were on HDAP. In 12 (85.7%) cases polypharmacy was identified as a cause of HDAP and only 3 (21.7%) cases having a documented reason for the HDAP. Only 4 patients (28.6%) received the necessary monitoring of U&Es and LFTs. None of the patients met the monitoring requirements of ECGs and prolactin levels. One HDAP patient had an HDAP form in their notes as per health board policy.

## DISCUSSION:

HDAP in the community is clearly an area where patient safety can be dramatically improved. Only in exceptional cases, with appropriate monitoring and documentation, should HDAP be initiated as per guidelines. Combined antipsychotic therapy remains the most common cause of HDAP and should therefore be used cautiously. Re-education and reinforcement of guidelines could play a crucial role in improving adherence to local policies while developing alert systems may prove vital to appropriate monitoring of HDAP. This audit highlights the issue of HDAP in the community and demonstrates that monitoring and documentation in line with the HDAP policy can be improved.

## REFERENCES:

1. Taylor, D. Paton, C. Kapur, S. The Maudsley Prescribing Guidelines. 12th Edition. Wiley Blackwell. 2015.
2. Royal College of Psychiatrists London. Consensus statement on high dose antipsychotic medication. Council Report CR138. 2006.

# An Audit of Adherence to Gentamicin Dosing and Monitoring Guidelines on a National Level within Wales

Sarah Dooley

## FOCAL POINTS:

- The purpose of this audit was to determine whether local Gentamicin prescribing and monitoring adheres to the Health Board's guidelines and to use this data to inform the work of the All Wales antimicrobial Pharmacy group
- Results showed that prescribing and monitoring of Gentamicin does not consistently comply with local Gentamicin guidelines.
- Re-education of prescribers and nurses is required to reduce dosing and monitoring errors of gentamicin

## INTRODUCTION:

There has been a surge in the use of Gentamicin for the treatment of gram negative bacterial infections in Health Boards & Trusts (HB&Ts) across Wales. Due to its concentration-dependant activity and sustained post-antibiotic effect, Extended Interval (EI) Gentamicin dosing regimens are often used when gram negative infections are suspected<sup>1</sup>. However, regular therapeutic drug monitoring (TDM) and tailored dosing is required due to gentamicin's adverse effect profile in combination with its pharmacokinetic profile. There are currently no nationally agreed standards for gentamicin prescribing. To aid healthcare professionals to optimally use Gentamicin, HB&Ts have produced different local guidelines throughout Wales. These guidelines explain how the drug should be dosed and monitored for its optimum use. Despite implementing such guidelines, incorrect dosing and monitoring of gentamicin is a well recognised cause of medication error. This audit seeks to establish the scope of the problem and help inform whether a co-ordinated national effort to improve prescribing and monitoring is required.

## METHODS:

All adult inpatients prescribed EI Gentamicin were included. An initial data collection form was designed by the project lead and piloted by the auditor for one week. Data was collected by the auditor between 5th October and 2nd November 2016 and included patient's weight, height, BMI, renal function, gentamicin dosing (i.e. initial/second/third dose and date/time of dose administration), gentamicin monitoring (i.e. initial gentamicin level and date/time the level was taken) and the total course length. The data was collated and analysed using Microsoft Excel and sent to the project lead for inclusion in the All Wales data. Ethics committee approval was not required.

## RESULTS:

Total number of patients included in audit = 49

General surgery wards = 29 patients

General medical wards = 20 patients

The proportion of the initial, second, third doses of EI gentamicin that comply with the local guideline (+/-20mg)			The proportion of initial serum EI gentamicin levels that are taken within the time frame specified by the local guideline			The proportion of EI gentamicin doses following the first mandated gentamicin serum level that are prescribed to be given at the correct time	
Yes (%)	No (%)		Yes (%)	No (%)		Yes (%)	No (%)
	Too high	Too low		Too late	Too early		
67	12	21	82	16	2	59	41

## DISCUSSION:

The results showed that dosing and monitoring of Gentamicin does not consistently follow local guidelines. Consequences include risk of patient harm through adverse effects and/or inadequate therapeutic treatment. A local strategy is required to improve prescribing and monitoring. The majority of the problems associated with poor adherence could be solved with re-education of prescribers and nurses by the Pharmacy team with regard to the patient safety issues associated with Gentamicin and training on how to dose and monitor Gentamicin according to local policy. A questionnaire could be developed to investigate what tools support the guidelines. For example, a calculator or online computer system could aid prescribers in prescribing the correct dose at the correct time. On admission essential information required to accurately calculate doses of Gentamicin ie.weight, renal function must be sought. A further recommendation is that a co-ordinated national effort is required to improve prescribing and monitoring of Gentamicin across Wales. Finding a solution that works best for all Welsh hospitals is the long term aim of this audit.

## REFERENCES

1. Phillips D, Booth,G. All Wales Gentamicin Audit. Pre-registration Guide. 2016/17: p 1-17.

# An Audit of the Level of Adherence to Once Daily Gentamicin Dosing and Therapeutic Drug Monitoring Guidelines.

Suhani Ghiya

## **FOCAL POINTS:**

- The aim of this audit is to assess the level of adherence to once daily gentamicin dosing and therapeutic drug monitoring as stated in the local guidelines.
- The main areas of non-adherence to local guidelines were found to be incorrect gentamicin dosing as the patient's weight was not adjusted as per local guidelines and gentamicin levels were taken at inappropriate times.
- Awareness and education of prescribers is required to highlight the importance of adhering to local guidelines and prompt sampling of levels for appropriate drug monitoring. Furthermore, clear documentation of reasons for deviation from guidelines should be encouraged.

## **INTRODUCTION:**

Gentamicin is a broad spectrum aminoglycoside antibiotic that is used to treat serious infections typically moderate-severe gram negative infections. An increasing problem with antimicrobial use is antimicrobial resistance which can lead to difficulties in treating infections, resulting in treatment failure and development of potential complications. Hence, it is vital to ensure that antibiotics are prescribed according to the local antimicrobial guidelines to prevent the risks associated with antimicrobial resistance and to effectively treat infections. The aim of my audit is to determine whether gentamicin guidelines are being followed when prescribing once daily gentamicin doses and whether trough gentamicin levels are being obtained 18-24 hours post dose as per local guidelines.

## **METHODS:**

The audit was conducted in October 2016 over a period of 4 weeks. Ethical approval was not required. All adult in-patients who received a once daily dosage of gentamicin were included. A standardised All Wales data collection form was utilised for the audit. Data was obtained from inpatient medication treatment charts, patients' medical and nursing notes and Welsh Clinical Portal. Prescriptions were reviewed in line with the local gentamicin guideline and calculator which utilises a number of patient factors to recommend a gentamicin dose. Timings of gentamicin levels were audited and adherence to local guidelines was assessed. Compliance to the local guidelines regarding dosage and monitoring of gentamicin were analysed using Microsoft Excel ®.

## **RESULTS:**

A total of seven patients received once daily gentamicin between 5/10/2016 and 2/11/2016. The gentamicin calculator was used for 71% (n=5) of the patients audited. However, 29% (n=2) of the patients were prescribed larger gentamicin doses than advised by the gentamicin calculator as per guidelines. Gentamicin levels were taken within the time frame specified by local guidelines for 71% (n=5) of the patients. However 29% (n=2) of patients did not have their gentamicin levels sampled as per the guidelines. Gentamicin levels were obtained earlier than recommended in 14% (n=1) of the patients and a further 14% (n=1) of patients had levels taken later than recommended. From the prescription chart it was deemed that doses were given approximately 24 hours apart although specific time of dosing were missing for 43% (n=3) of the patients audited.

## **DISCUSSION:**

From the results of this audit it can be concluded that there are two main areas of non-adherence to gentamicin guidelines. The first being that weight adjustment calculations as per the gentamicin calculator were not being carried out leading to patients receiving larger doses of gentamicin than recommended by the local guidelines. Secondly gentamicin levels are not consistently being taken within the time-frame specified in the local guidelines i.e. trough levels taken either outside the 18-24hours time-frame. Not all drug charts specified a time for gentamicin administration. The reasons for non-adherence were not documented in the patient's notes and so the reasons cannot be addressed and resolved. Findings of this audit will be presented to the relevant healthcare professionals in order to raise awareness with the aim to improve prescribing of gentamicin according to the local guidelines. Furthermore staff will be encouraged to document deviation from local guidelines with clear reasoning.

# An Audit of the Anticoagulation Prescribing in Cancer Patients Diagnosed with Venous Thrombo Embolism

Thomas Robinson

## FOCAL POINTS:

- To establish current anticoagulation prescribing standards in cancer patients associated with Venous Thrombo Embolism (VTE) including: planned duration of treatment; correct dosing according to patient's weight; and appropriate blood monitoring
- Only 16.5% of patients were intended to be treated for the recommended 6 month duration of treatment dose Tinzaparin; 78.5% were initially dosed correctly according to body weight; 78.5% had the dose adjusted according to their body weight over the period of treatment; 70.9% of patients received the appropriate follow-up blood monitoring whilst 73.4% received baseline monitoring
- The health board is failing to comply with current recommendations for anticoagulation prescribing in cancer patients diagnosed with VTE

## INTRODUCTION:

In 2015 the National Institute for Health and Clinical Excellence (NICE) updated their original guidance on the diagnosis and management of venous thromboembolic disease<sup>1</sup>. It states to offer Low Molecular Weight Heparin (LMWH) to patients with active cancer and confirmed proximal Deep Vein Thrombosis (DVT) or Pulmonary Embolism (PE), and to continue for 6 months. After this 6 month period, the risk and benefits of continuing anticoagulation should be assessed. Currently there is no guidance within the health board regarding anticoagulation prescribing in cancer patients diagnosed with DVT or PE; however the guidelines set out by NICE and dosing in the BNF<sup>2</sup> are assumed to be followed.

## METHODS:

The lead anticoagulation pharmacist created a database of patients who were prescribed Tinzaparin from the dispensing software, JAC, and cross-referenced this data with oncology patients. From this database, 79 patients were highlighted to fit the criteria as they were diagnosed with either a provoked or unprovoked VTE and were included in the data collection process. The results were collected using a variety of computer systems including: ChemoCare, the chemotherapy electronic prescribing system; Electronic Transfer of Care (ETOC); Indigo, to retrieve patient's blood results and JAC. The data collection process ran from 31/10/16 until 01/12/16.

## RESULTS:

Audit Criterion	Result	
	Number	Percentage
Standard 1: 100% of patients diagnosed with cancer associated VTE should receive at least 6 months of treatment dose LMWH – how many patients have this documented in their clinical notes?	13/79	16.5%
Standard 2a: 100% of patients should initially receive the correct Tinzaparin dose according to their body weight	62/79	78.5%
Standard 2b: 100% of patients should subsequently receive the correct Tinzaparin dose according to their body weight	62/79	78.5%
Standard 3a: 100% of patients should have baseline bloods performed before starting treatment with LMWH	58/79	73.4%
Standard 3b: 100% of patients should receive appropriate follow-up bloods to monitor for HIT	56/79	70.9%

## DISCUSSION:

There is a lack of documentation on the proposed treatment plan for cancer patients diagnosed with VTE, which is potentially leading to poor adherence to current guidelines. The health board is failing to prescribe Tinzaparin treatment dose according to body weight, which may result in sub-therapeutic treatment or potential for adverse effects in over-dose. Patients newly started on LMWH should be monitored for Heparin Induced Thrombocytopenia (HIT), however this is not the case for roughly 25% of patients and therefore the diagnosis of HIT may be completely missed. In conclusion, the audit results potentially show a lack of clarity in prescribing regimens for cancer patients receiving treatment for VTE. Further work needs to be done to determine why this is the case and to establish set guidelines and recommendations.

## REFERENCES:

1. National Institute for Health and Clinical Excellence Guidance: Venous thromboembolic diseases: diagnosis, management and thrombophilia testing, Clinical Guidance [CG144], Published June 2012 and last updated November 2015.
2. British National Formulary: Edition 72, Sept 2016 – March 2017.







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