Introduction

This project is a partnership project with Midlands Health Network and the Midland Community Pharmacy Group (MidCPG) for the development and implementation of the role of the Tokoroa Clinical Pharmacist. MidCPG is providing Clinical Oversight for this role including access to Peer Review, Peer Support and development.

The population of Tokoroa is a high needs population. Tokoroa has a population of approximately 15,000. Based on data from the Midland Health Networks enrolled population the majority of the people (80%) enrolled with the MHN practice live within 4km of the practice, while 1 in 20 patients (5%) live more than 30 kilometres from the practice (mainly residing in Putaruru, Mangakino and surrounding areas). The enrolled population is deprived, with 48% classified as quintile 5 with another 20% in quintile 4. Almost half are Maori or Pacific and utilise general practitioners at a lower rate than the rest of the country. Based on this information, and with the amalgamation of 3 MHN general practices and their subsequent move to the Tokoroa Hospital site (along with the one other Tokoroa GP practice) the Clinical Pharmacist role was developed and implemented.

This report is a snapshot of the work undertaken by the Clinical Pharmacist in the 6 months following the move of the GP practices to the Tokoroa Hospital site.

Background

A Clinical Pharmacist service is an advanced role working collaboratively within the multi-disciplinary team, centred on case-based management of all current and potential medication treatment for individual Service Users. The Clinical Pharmacy Service supports integration of pharmacist services for the patient between community pharmacy, community-based services, general practice and secondary care. This also will provide access to a higher level of pharmaceutical expertise for all members of the multidisciplinary team than may otherwise be available.

Service objectives focus on proactive management of changes and the development and maintenance of pharmaceutical care plans by a Pharmacist working as a specialist in a multi-disciplinary team. The Clinical Pharmacist primarily works with patients who are high risk or high needs and have medicines related issues (e.g. are on complicated drug regimens, have low health literacy and understanding of medicines, have frequent hospital admissions, have recently had medication changes for medications for chronic conditions, have poor renal function etc.). Medication-related education for patients, whanau, caregivers and other health professionals is also an important component of the Clinical Pharmacist role.

The Clinical Pharmacist undertakes a thorough review including GP notes, discharge summaries and clinic letters, laboratory results and other relevant information to form an overall picture of the patient and their medications. The Clinical Pharmacist works collaboratively with the patient, whanau/caregivers, their doctor and wider health care team to ensure medicine regimens are in line with best practice and evidence based guidelines. In this the CP must take into account the patient’s lifestyle and health beliefs whilst also ensuring education and adherence support in order to optimize medicine related outcomes.
Outcomes

Since its inception in late 2013, the CP role in Tokoroa has developed in response to the particular needs of the Tokoroa community and the healthcare team. Identification of potential medication-related problems and resolution in consultation with the patient and the GP comprises a major portion of the role. Provision of education and support around best practice in the use of medications for the patient and the wider healthcare team has also become a key part of the role.

The CP’s activities in reviewing documents received by the practice and updating the practice files add a pharmacist’s review to the clinical review of the patient information received in the practice. Studies have shown that clinical pharmacists identify significantly more adverse drug events in reviewing patient medications than either nurses or doctors. Additionally this frees the GPs and nursing staff from updating the Medtech records and releases more time for them for direct patient care.

The Tokoroa Clinical Pharmacist
- Is available for phone or F2F consultation by patients, family/carers, other healthcare professionals and the community around medication-related questions
- Responds to medicine information queries in a timely manner
- Provides a monthly PHARMAC update for GPs & practice staff
- Provides a weekly “Pharmaceutical Thought for the Week” for GPs & practice staff
- Provides presentations on new drugs and therapeutic benefits for appropriate groups e.g. febuxostat for gout for GPs
- Works collaboratively within professional networks to ensure information provided is appropriate, peer-reviewed and up to date
- Brings current medication safety issues to the attention of other practice staff
- Proactively identifies areas for education and provides or arranges for it to be provided eg review of causes of serotonin syndrome, what to watch for, medications implicated

Relationships

The service specification states
- developing long-term functional relationships with all practice staff will be essential and regular practice presence and participation will be fundamental to the success of the role.
- the environment in which the clinical pharmacist will operate will inevitably involve complex relationships among and across a number of parties.

The Tokoroa Clinical Pharmacist has developed a multi-disciplinary approach to optimising patient health outcomes. This is a direct result of the engagement and relationship development work that has been undertaken with the following stakeholders

Tokoroa Medical Centre
- Integral team member, consulted by MDT members multiple times daily
- Attends daily huddle
- Receives and responds to hospital discharge summaries & clinic letters in a timely
manner
• Updates practice software with current medication details (releasing GP time for patient care)
• Identifies potential problems with medication regimens and manages resolution in consultation with patient, whanau, carers, GPs, nurses, community pharmacy and hospital staff
• Is involved in MDT team review of practice protocols and standing orders to support safe and efficient prescribing, review and administration of medications
• Attends fortnightly GP Peer Group
• Attends fortnightly clinical group meetings with nursing staff
• Undertakes medicine audits to ensure and improve quality and appropriateness of medicine use within the practice

Case study: Medicines related hospital admission
Ms A, a middle aged lady new to the practice, was admitted to hospital with sudden onset of confusion, which resolved over the next few hours. She was discharged with no identified reason for her symptoms. The CP reviewed the discharge summary routinely, and identified that Ms A had commenced tramadol in addition to her regular medicines fluoxetine and amitriptyline, thus she was at high risk of serotonin syndrome (one of the symptoms of which can be confusion). The CP discussed this with the GP, then phoned Ms A and advised her to stop tramadol. She has since remained symptom free. The CP then provided education for the GPs, PA’s, nurses and community pharmacists around serotonin syndrome, a medication-related adverse event often not diagnosed as the symptoms can be low-grade and similar to many other conditions. Subsequently several other patients with possible serotonin-related symptoms have been identified by the GPs, and their medications reviewed.

Case study: referral from GP- Pain management rationalised
Mrs B, a 73 year old European lady, with multiple medical conditions, was referred by her GP for help with pain management. The CP reviewed medicines with Mrs B and her daughter, discovered she was taking many doses of 3 different fast-acting opiate medicines (oxycodone, morphine and codeine) as well as excess quantities of paracetamol, but her pain was not under control. The CP recommended taking paracetamol regularly but at a maximum of four times daily. The CP rationalised the opiate doses by calculating equivalents and recommended long-acting oxycodone with some short-acting for breakthrough pain. The CP followed up 1 week later for dose adjustments. The CP also suggested to the GP that nortriptyline be trialed to assess possible neuropathic pain component, and if that was effective but not tolerated, gabapentin could be commenced. These changes were implemented and Mrs B’s pain is significantly better controlled. Mrs B and her daughter were very satisfied and have consulted the CP several times since with medication-related queries.

Tokoroa Family Health (TFH)
• Established a relationship
• Process for referral in place
• Sends medicines information & PHARMAC update emails
• Medicine information queries are received and answered in a timely way
• GP’s from TFH sporadically attend clinical meetings so limited clinical contact
• TFH have not taken up the offer of referrals to the Clinical Pharmacist (CP) or of a weekly clinic being held in their premises by the CP.

South Waikato Pacific Islands Community Services (SWPICS)
• Relationship established
• Presentations alongside MidCPG staff at Pacific Forums e.g. warfarin session
• Developed systems and processes for referral between CP and Mobile MUR pharmacist team to ensure efficient use of different skill-sets
• Receive and have undertaken face to face referrals direct with SWPICS patients
• Working with nurse practitioner to further develop relationship with SWPICS nurses for the provision of medicine information and education.

Case study – referral from SWPICS for discussion of stroke prevention options in AF
Mr C, an elderly Pacific Islands man, came to medical centre accompanied by his wife, daughter, and the SWPICS nurse, to see the CP. He was not overly happy at being brought in by “all these women”!
Mr C had been admitted to hospital with a stroke, diagnosed with atrial fibrillation and subsequently started on warfarin. Since the stroke he has suffered weakness down one side of his body
The CP discovered that Mr C did not want to take warfarin as he had attributed his post-stroke weakness to starting warfarin, and his friend had described it as “rat poison”.
It also transpired that Mr C had had previous problems with the iron levels in his blood, and was confusing the words INR (blood tests for warfarin monitoring) and iron. He knew he needed his iron tested every three months and he had things nicely under control, so did not understand why the sudden need for weekly tests.
The CP discussed the pros and cons of warfarin in stroke prevention, why AF increases the risk of stroke, and minimising risks of warfarin with regular INR testing. The INR/iron confusion was discussed and clarified, as was the likelihood that the stroke caused the weakness, not the warfarin.
As the appointment progressed, Mr C was visibly much more relaxed and chattier, and much happier about his medicines. He and his family gained a much clearer understanding of his medicines and the reasons for taking them. He commented “I’ll take them now I understand why I need to. I don’t want another stroke”.

Raukawa
• Relationship established
• CP is involved in provision of education for Raukawa staff and patients in conjunction with other providers
• Practice is developing a working relationship with Raukawa and CP will be involved in working with practice and Raukawa nurses and other staff

Waikato Hospital
• Relationship with Waikato Hospital Pharmacy Chronic Care Pharmacists team
• Reciprocal relationship for the sharing of hospital admission and discharge information
• Access to hospital data systems
Case study: Collaboration with hospital pharmacists to ensure patient safety
Mrs D was admitted to Waikato Hospital Short Stay unit with a DVT following orthopaedic surgery. She was started on the anticoagulants Clexane and warfarin. The ward requested full Warfarin education from the hospital pharmacist just before discharge, but due to time/staffing constraints Mrs D had left before the pharmacist was able to get to ward to see her; it was unclear if the ward staff had provided any education. The hospital alerted the CP who was able to contact Mrs D and establish no education had been provided and Mrs D was confined to the house because of her recent surgery. In addition Mrs D had been given prescriptions for 5mg and 1mg warfarin tablets, which entails a risk of confusing the tablets and subsequent bleeding risk. Mrs D did not have any advice about the dose of warfarin or what the arrangements for this were. The lab was to visit that morning for first INR.

The CP arranged an urgent home visit. She provided warfarin education and ensured Mrs D completely understood the difference in strengths and how to calculate what to take. While there, the CP found Mrs D had been told compression stockings were needed but not how to access them, so the CP liaised with the District Nurse to organise this.

Case Study: Multi Disciplinary Team Care
The CP received the discharge summary for Mr E, a 70 year old Maori man who had had multiple medication changes following an admission for a serious collapse and resultant surgery. The CP initiated ongoing phone and F2F discussions with the community pharmacy, GP, hospital staff, patient and family on his return to Tokoroa. The CP identified that when he got home, Mr E had restarted one of the medications that had been stopped in hospital. The CP discussed with the GP concerns re possible effect on kidney function due to suddenly restarting the medicine at high dose, and suggested urgently checking renal function and electrolyte levels. In addition the CP asked the GP to include magnesium levels as Mr E has an ileostomy.

A lab form for retest of electrolytes and renal function was arranged and the results showed deranged electrolytes including low magnesium. Treating this with oral magnesium supplementation was not advisable as it would make the liquid loss from his stoma worse (thus potentially worsening the problem).

The CP initiated discussion with the surgical dietitian and was able to advise GP and patient of appropriate prescription of electrolyte fluids to minimise stoma electrolyte loss as well as appropriate medicine changes to help reduce stoma loss. This required some detective work, as the dietitian advised that in hospital the contents of one sachet of salt (like those available in cafés) was added to each sachet of electrolytes. The CP obtained sachets of salt, which did not have any quantity on the label, and weighed them at the pharmacy, so that Mr E could be advised of the appropriate amount of salt to add to his electrolyte sachets (quarter of a teaspoonful).

The CP also noted that Mr E’s gout prevention medication was stopped in hospital due to temporarily impaired renal function. Subsequently increased urate level was noted on blood results. As this is a risk factor for gout and as the renal function had recovered, the CP advised the GP re restarting of medication to prevent further gout attacks.

- Relationship with hospital clinics established eg renal clinic.
The CP remained in regular contact with Mr E and his family over the next month and coordinated regular lab tests and medication changes until his condition stabilised.

**Tokoroa Hospital**
- Established a working relationship with inpatient ward Charge nurses & staff, nurse educators, prescribers, Clinical Director, management & other staff
- Have been granted access to hospital computer system, in line with WDHB external contractors’ policy and MHN privacy policies. This gives CP the ability to use the hospital computer suite to access discharge summaries, lab results etc before they have arrived in hard copy at the practice
- Trialled various ways of identifying Chronic Care patients who have been admitted to hospital and expected discharges
- Ongoing discussion between practice, hospital and WH Pharmacy re best way to integrate services.

**Case study: Timely access to the discharge summary reduces the risk of drug related adverse events**
Mrs F recently been discharged from hospital. The CP received a query from the community pharmacy as to what her current medicines should be. The CP was able to source the discharge summary from the hospital system, visit the pharmacy to compare medicine lists, and conduct a medicine reconciliation to identify the most likely intended medication list. The CP discussed this with the GP, updated Medtech, and organised an appropriate prescription. The CP also identified a potentially serious drug interaction due to concurrent cotrimoxazole and methotrexate (risk of potentially fatal bone marrow depression or pancytopenia from this combination). Immediate full blood count and liver function tests were organised and the CP added recalls to Mrs F’s patient file to ensure ongoing monitoring occurs while she is on methotrexate.

**Rest Home**
- Developing a relationship with new rest home manager
- Collectively identified issues around prescribing and charting
- Discussion with GPs, pharmacy & resthome about introduction of electronic prescribing, which would have potential for significant safety improvements – resthome currently unable to fund
- Identification of areas of risk to patients
- Ongoing discussions for improvement opportunities and a way forward

**Case study: Intervention reduces risk of Adverse Drug Reaction, improves antibiotic therapy and resolves electrolyte derangement**
The CP reviewed a discharge summary for Mrs G, a 77yo double amputee lady resident in a resthome who had been discharged from hospital on dabigatran 150mg twice daily (full dose). The CP calculated Mrs G’s renal function from her lab results as the eGFR provided by the laboratory is significantly inaccurate in amputees. The CP identified that since discharge Mrs. G’s renal function had deteriorated very rapidly, and the current calculated figure was now lower than the minimum for any dose of dabigatran. The CP recommended consideration of alternative anticoagulants such as warfarin or aspirin instead.
The CP also noticed that Mrs. G had been prescribed nitrofurantoin for a urinary tract infection, but due to her much reduced renal function this medication was unlikely to be effective. The CP recommended an alternative antibiotic.

Additionally, the CP noticed that Mrs G had very high potassium levels (which can cause cardiac complications or even death). Mrs. G had been prescribed Movicol in hospital, which can raise potassium levels, so the CP recommended stopping the Movicol and replacing it with an alternative.

The GP accepted all three recommendations. Happily, Mrs. G’s renal function improved significantly, her potassium levels normalized rapidly and her infection cleared.

Tokoroa Community Pharmacy
- Established a working relationship
- Day to day contact with Community Pharmacy staff, involving multiple visits and phone calls to resolve issues identified by CP or by Community Pharmacy staff
- Access to Community Pharmacy computer records by visiting the pharmacy
- Prescription clarification – ability to ascertain with the pharmacy if the script reflects the GP’s intention thereby saving practice and GP time, avoiding potential errors and optimising patient medicine management
- Improves communication of medication-related changes made by external prescribers (eg hospital clinics)
- Shared input into patient medicine management thereby optimising patient outcomes while avoiding duplication of resources.
- Enables freeing of clinical pharmacist to work with complex patients
- Answers clinical queries, thereby increasing the clinical knowledge base available to community pharmacy staff

Case Study: Collaboration with community pharmacy to ensure patient access to medicines
Mr H was discharged from hospital in Hamilton with a prescription for a non-subsidised medication, but he had been told by the hospital doctors that it could be obtained subsidised. The community pharmacy asked the CP to see if this was possible. The CP followed up with the hospital pharmacists, house officer, & drug company rep to discover Mr H had been enrolled in a special access programme by the hospital consultant. The CP organised a process for access to the medication and informed the community pharmacy so they could manage this from then on.

Community Services
- Day to day working relationship with Clinical nurse specialists (CNS) Diabetes and CNS Heart Failure to ensure medication-related changes are communicated to GPs and Medtech updated in a timely way
- Answer CNS questions and queries pertaining to medicines related issues
- Ad hoc medicines queries from occupational therapists, physiotherapists, public health nurses etc
- District Nurse wound care project – developing the relationship between District nursing and Clinical Pharmacy. DN are ideally placed to alert the CP as to any
obvious issues with the safe use of medicines within the home

- Attend the quarterly community nursing meetings

**Case study: collaboration with community services and hospital staff to improve patient access medicine while reducing hospital prescriber workload and save the DHB money**

Master I, a child under the care of paediatricians and specialty nurses at Waikato hospital and the Public Health nurse team at Tokoroa, has an unusual condition which requires multiple prescriptions on a weekly basis due to PHARMAC restrictions. If the medicines are not available Master I is unable to attend school.

The CP heard this story while in conversation with the Public Health nurse onsite at Tokoroa hospital. The CP organised an urgent script from the GP because the hospital script had not arrived by fax and was presumed to be still in the post. The CP then proactively discussed the case with PHARMAC and as a result was able to advise the paediatrician that PHARMAC would consider application for special funding for this child's prescriptions given the unusual condition – this would make the family's access to medicines easier and allow the child to attend school regularly. In addition the bureaucratic burden on the hospital staff is reduced and there are potential cost savings to the DHB.

**Case study: Medicine reconciliation identifies multiple issues**

The CP initiated a medicine reconciliation following receipt of a routine letter from the renal clinic about Mr J, a 58yr old NZ European man. The medicine reconciliation identified alfacalcidol and calcitriol (essentially the same medicine) both being prescribed by different renal physicians at different doses and both dispensed at the same time. The GP was prescribing furosemide but the renal department was unaware of this. Mr J was buying alka seltzer for stomach pain which contains ingredients harmful for his kidney condition. The CP liaised with the renal nurses and physicians; they corrected their medication list and made a decision on the alfacalcidol/calcitriol question. The CP suggested omeprazole to help with stomach pain so he could stop the alka seltzer. The CP also liaised with the community pharmacy and arranged for Mr J to be offered compliance packaging for his multiple medications. Follow up 3 months later by the CP identified an error on another renal letter where alfacalcidol was written but the script given was for calcitriol. Intervention prevented double prescribing again.

**Peer Group**

- Participates in the bi-monthly South Waikato Midland Community Pharmacy Group Peer Review Group.
- Shares information and resources
- Shares relevant case studies.
- Includes Peer Group in circulation of relevant CP medicine information queries & answers

**Tokoroa Council of Social Services (TCOSS)**

Presentation to TCOSS staff introducing the CP and Mobile MUR Pharmacist, with description of roles and opportunities for referrals

**Mobile MUR Pharmacist**

Discharge summaries and clinic letters are screened by the CP on receipt to identify the
highest risk/needs patients. Other patients with chronic conditions who would benefit from education are referred to the appropriate MUR services. Conversely, patients who are seen by the MUR team and potential problems identified can be referred to the CP

- The CP has an established relationship with MUR pharmacists
- Developed a triage model ensuring best use of clinical pharmacist time with the targeted population, but still ensuring patients with need are not missed and receive service from the Mobile MUR team.
- Direct e-referral to Mobile Pharmacist for MUR's
- Direct electronic provision of MUR documentation to GPs

**Case study: MUR pharmacist referral highlights unnecessary medicine**

The MUR pharmacist identified Ms K was taking 2 medicines for reflux (ranitidine and omeprazole), and queried if this was intentional. Occasionally they are prescribed together, so the CP reviewed the GP notes and discovered it was intended that omeprazole replace ranitidine in 2009; the omeprazole was started but for some reason the ranitidine was not stopped. The CP referred Ms K back to GP for review, with suggested slow reduction of ranitidine to minimise acid rebound.

**Safe use of Medicines**

Medication Safety is one of the four priority areas in the NZ National Patient Safety Campaign. Prevention of Adverse Drug Events (ADEs) is key to safer use of medicines. It is estimated that approximately 60 percent of ADEs are preventable. The frequency of ADEs increases with the number of medicines taken, with some sources estimating 82 percent of patients taking seven or more medicines are likely to suffer an ADE. Potential targets for safer use of medicines include prevention of admissions due to haemorrhage. This is an area in which the CP can play an important part, both with review of medication regimens to identify risk of bleeding related to medicines, and with education of staff and patients about, for example, increased risk of bleeding with use of medications purchased over the counter.

**Case study: Safe Use of medicines – prevention of ADE**

The CP overheard a phone request for a repeat prescription from Mr L and noted the patient requested ibuprofen as well as aspirin, clopidogrel and paroxetine. The CP identified a significant risk of GI bleed from this combination (GI bleeds can be a life threatening medical emergency). In addition ibuprofen will likely reduce the effectiveness of aspirin in clot prevention. The CP immediately reviewed all medications and referred back to GP before the prescription was issued. Mr L was phoned urgently by the GP to discuss his pain management. The CP meanwhile reviewed the patient’s history and established the combination of clopidogrel and aspirin was started in 2010 after a cardiac event and it was intended for clopidogrel to be stopped after 6 months. The GP was notified and has arranged for Mr L to come in for a full medical review.
Prioritisation of CP Service in a high needs, low health literacy population

As the population of Tokoroa has very high health needs it is important for the Clinical Pharmacist to establish a prioritisation process for working with high risk, high needs patients.

It has been clearly identified that the Tokoroa population includes a large number of high needs patients with low health literacy, who are taking multiple medications (often 10 or more different medicines) have a very large potential for adverse medication events. Other patients who are taking fewer medications but who also have low health literacy may not be getting the benefit from their medications that they should – for example, not using their asthma inhalers appropriately and consequently being admitted to hospital.

The Clinical Pharmacy Services which may be provided to patients identified as high needs include:

- Patients discharged from hospital have high priority for medicine reconciliation and follow up to avoid any potential issues with adherence or understanding as well as to ensure appropriate monitoring
- Clinical check for appropriateness of medicine regimen
- Full medicine review – f2f appointment with the patient and review of all medications with plan and recommendations to the GP and patient for medicine management
- Input / advice to the practice team re specific issues within the medicine regimen

Other patients with identified needs may be referred to the MUR pharmacists or their community pharmacy.

Case study: Intervention and education prevents potential readmission

Mr M, a 72yr old Maori man, was discharged from hospital after collapse and resuscitation on the marae. During hospital stay, it was identified that he had had a heart attack following a massive gastric bleed secondary to a number of gastric ulcers.

Mr M was taking warfarin for stroke risk reduction due to AF. He also suffers from gout, for which he had been taking non-steroidal anti-inflammatory drugs (NSAIDs). These had very likely contributed to (if not caused) his ulcers. His medications were completely reviewed in hospital and the warfarin and NSAIDs stopped. He was provided with a medication card with a large note on the bottom saying “STOP NAPROXEN”.

The CP arranged a follow up appointment to review medications and remove superseded medicines. Gout management was discussed at length. Mr M had been given colchicine in the hospital but he did not like taking them because they upset his stomach. It transpired that Mr M did not know what the “Naproxen” tablets were, but he did know that when he had gout, he had a bottle of yellow tablets that worked really well. The label on the bottle was very difficult to read, but turned out to be an old bottle labelled doxycycline (an antibiotic) into which Mr M had transferred some “yellow tablets” (which were of course Naproxen) so he could carry them with him.

Mr M was very unwilling to give up his naproxen. The CP negotiated between Mr M and the GP to organise a prescription for prednisone instead, and titrated a restart of allopurinol to
prevent further gout attacks. Use of regular paracetamol for arthritic pain was also discussed.

Mr M returned all his superseded medications to the CP for disposal. The CP suggested that Mr M should consider blister packs and he agreed.

Mr M has since made appointments to see the CP of his own accord when questions about his medications have arisen. His ulcers have healed, and he has subsequently been successfully restarted on warfarin. He has not needed the prednisone, and he has been able to return to work. He is getting his medications blister packed and the CP has him on recall to just touch base every three months or so to see how he is doing.

Case study – patient education aids antiepileptic medication management
Mrs N, a 63 year old Samoan lady, has suffered from seizures since a stroke some years ago. These seizures result in occasional hospital admissions. She was prescribed two antiepileptic medications but her last admission blood tests showed virtually non-existent blood levels of antiepileptic medications. This implies she is not adherent to therapy.

The CP arranged an appointment with Mrs N and discussed ongoing medication management strategies. During the appointment, the CP became concerned about whether in fact Mrs N’s shortness of breath was related to her heart rather than to asthma, and organised an appointment with the Nurse Practitioner for a cardiovascular risk assessment and physical check. The CP organised appropriate laboratory testing to be completed prior to the NP appointment, including repeat medication levels.

The antiepileptic medication levels for the second test were better but still low. Mrs N insists she is now taking her medications as prescribed. The pharmacokinetics of the medications are complex especially in combination, and it is easy for dose increases to result in toxicity especially if the patient also suddenly becomes adherent to their medication regimen. Mrs N has been seizure free recently so the CP advised that the best option was to remain on the current doses and monitor seizure events and blood levels over the next 12 months. The plan is therefore for the CP to remain in contact with Mrs N to support her in taking her medications safely and remaining seizure-free and out of hospital.

The NP saw Mrs N and discussed additional strategies and medications to reduce her cardiovascular risk.

Best Practice
The service spec states the Clinical Pharmacists will act as a resource to general practices. A large proportion of the advice given to practices will be related to complex patients and how pharmaceuticals are best used for them.

- With the amalgamation of the practices there was some initial intense work around establishing agreed practice protocols.
- Ongoing review of practice protocols including:
  - Controlled drug management
  - Repeat prescriptions
  - Working with the GP Registrar on practice protocols for
- antibiotic prescribing
- ACEI/ARB initiation
- B-Blocker initiation
- Care of patients taking antipsychotic medications
- Safe and appropriate prescribing of NSAIDs
  - Consistent use of Medtech for
    - Classifications
    - Prescribing
    - Externally prescribed medicines
    - Disease state classification
  - Standardising Medtech protocols
  - Development of recall process for monitoring patients taking specific medications

**Pharmaceutical Thought of the Week**

The CP prepares a weekly email which is circulated to all clinical staff and if appropriate to the Community Pharmacies. This email contains an update on a medication related issue, sometimes one identified by the CP during medication reviews, or one that is highlighted nationally. The information contained is peer-reviewed by the other CPs in the Midland team prior to being sent out.

**Education and Peer Group Sessions**

The CP attends GP Peer Group and Practice Nurse meetings fortnightly. Participation in these meetings includes both formal presentations and informal medication queries.

Presentations to date include:
- Clinical Pharmacy and MUR Services
- Gout
- Dabigatran & Renal Failure
- Serotonin Syndrome

**Practise Nurse Education**

Presentation on:
- PHARMAC – how it works, why brands change, how to minimize costs for patients
- Standing orders
- Warfarin counselling (in conjunction with GP’s)

**Drug Audits**

Clinical audits of medication usage involve running a formal “query build” on the practice database to identify patients who meet the audit criteria, and then evaluation of those patients treatment against agreed standards. Drug audits are a useful tool to review prescribing and then optimise medicine regimes on an individual and population basis. They also serve to help align the practice with national and international best practice guidelines and quality indicators. Clinical drug audits can be for targeted high risk medicines or in response to international or national alerts or changes in prescribing practice.
Audits carried out so far include

- **Dabigatran**
  - A high risk anticoagulant medicine
  - Dose adjustments are required in kidney impairment or advanced age to ensure safety and reduce the risk of bleeding. In some cases it may be appropriate to discontinue the medicine.
  - CP conducted an audit on all over 75 year olds taking dabigatran to assess renal function, dose and referral back to GP with an appropriate recommendation.

- **Amiodarone**
  - High risk medicine which requires regular monitoring to avoid adverse effects
  - CP conducted an audit of all patients on amiodarone.
  - Checked recent Liver function test and Thyroid test has been undertaken
  - Checked up to date with Chest x-rays and eye tests
  - Developed a process for ongoing regular review of these patients in a timely manner.

- **Perhexiline**
  - High risk, uncommonly used medication requiring regular monitoring and blood levels

- **Leflunomide**
  - High risk medicine requiring regular monitoring
  - CP conducted an audit of all patients with a record of Leflunomide in their medical record.
  - Checked they were up to date with their monthly blood tests
  - Developed an ongoing process to ensure patients are monitored appropriately.

**Case Study – audit identifies patient whose monitoring has “slipped through the cracks”**

Mr O, a 67 yr old man who has multiple comorbidities and is prescribed 22 regular medications was identified via an audit as taking perhexiline, which is a medication requiring multiple regular blood tests as well as blood levels; these are recommended to be done every month. Unfortunately, it appears that this monitoring had not been set up when Mr O was commenced on perhexiline while in hospital, and this was not noted by the GP; Mr O had been taking perhexiline for over 18 months when the CP review identified the lack of monitoring.

The CP discussed this with the GP and a full set of monitoring was organised. Unfortunately the blood level sample was drawn into the wrong tube at the laboratory and so was not done. This was picked up by the CP and a further sample organised.

Additionally, as part of this monitoring it was identified that Mr O’s renal function had deteriorated and he requires a review of his antidiabetic treatment, for which he has been referred to the Nurse Practitioner.
Practice Support
Practice support includes undertaking roles relevant to Clinical Pharmacy that have assisted in reducing the time spent by the GP team in undertaking an activity that has a perceived patient risk.

Controlled Drug Management
The CP worked with the nursing staff to set up the controlled drug processes for the new practice in line with legislative requirements, and with the GPs to set up a management process for Controlled Drug prescription pads.

MPSO Medications
The CP took responsibility for reviewing the medications held in the practice and in the doctors’ bags for offsite visits, to ensure they were appropriate and met national standards.

Amoxicillin Recall
- This was a national drug recall that had a consumer level priority attached – it required patients who had been dispensed specific medicines to be contacted and their medication replaced.
- The CP identified from the first notification that action would be needed, and proactively ran a report to identify patients prescribed the affected medicine who might need new prescriptions. The CP then worked with one of the GPs to review the need and generate new prescriptions; then worked with the community pharmacy to contact the patients and explain what needed to happen.

Statins
- Worked in conjunction with practice manager, GPs and nurses to identify patients with high cardiovascular risk who were not prescribed statins
- The CP reviewed the patient’s files to identify if statins were contraindicated, and if not, patients were referred back to their GP for review

Daily Role
- Answer medicines information queries
- Resolve urgent queries about high-risk medications for specific patients
- Liaison with other practice staff (eg reception, nursing, NP, PA, GP) in dealing with routine patient inquiries and solving medication-related issues to optimize the patient medication therapy
- Provide a weekly “Pharmaceutical Thoughts” email to all relevant stakeholders
- Receipt of Medicine Use Review Reports from Mobile team and follow up on any clinical needs from these reports.
- Undertake clinical screening of discharge summaries & clinic letters
  - Review – the CP undertakes a clinical check of the discharge summary, including identifying medications added, stopped or changed, and also medications not mentioned on the summary but which are in Medtech
  - Triage for urgency and prioritise high needs/ high risk patients
  - Identify medicine changes and check for appropriateness, interactions, any clinical concerns requiring follow up such as laboratory test monitoring, blood
pressure or pulse monitoring, potential adverse effects.

- Medicine reconciliation undertaken, liaise with GP re changes and any recommendations and agree on follow up as appropriate

  - Medicines reconciliation
    - Identify two (or more) recent sources of information re patient’s medications (could be patient, family, pharmacy, hospital, practice)
    - Compare lists and prepare most likely list of current medications
    - Discuss errors/discrepancies with appropriate prescriber
    - Contact patient and discuss medication management

  - Medication Records
    - Liaise with community pharmacy to ensure medicines are dispensed and provide medicines education as required
    - Obtain copies of external prescriptions from community pharmacy when required to update Medtech
    - Update the medicine list in MedTech – ensures patient medicine information in MedTech is current and correct, saves GP time, avoids script errors and contributes to safe use of medicines

- Medication Management – Care Plan
  - Develop an appropriate medication management plan for identified high-needs patients. This plan could involve:
    - Phone
    - Booked initial appointment
    - Follow up appointment
    - Mobile MUR referral
    - GP referral
    - Practise Nurse referral
    - Monitoring
    - Stakeholder referral

- Prepare education for staff and patients about medication related issues
- Work on new or updates of practice protocols for medications
- Regular Drug Audit work

### Activity Overview

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</thead>
<tbody>
<tr>
<td>Total discharge summaries / clinic letters reviewed</td>
<td>208</td>
<td>Total not recorded</td>
<td>237</td>
<td>210</td>
<td>301</td>
<td></td>
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<tr>
<td>D/C sum/clinic letters needing CP action</td>
<td>69</td>
<td>68</td>
<td>89</td>
<td>82</td>
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<td>177</td>
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<tr>
<td>Medication Information queries (excludes off the cuff answers and corridor conversations)</td>
<td>Not recorded</td>
<td>23</td>
<td>15</td>
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<tr>
<td>Individual patient consultations / phone calls (not all recorded)</td>
<td>Not recorded</td>
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<td>7</td>
<td>10</td>
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<td>18</td>
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<tr>
<td>Follow up queries from previous days eg lab tests</td>
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<td>33</td>
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<tr>
<td>Drug Audit</td>
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<tr>
<td>Talks (staff &amp; patients)</td>
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<td>4</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
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<tr>
<td>Liaison with Community Pharmacy</td>
<td>Multiple times a day every day, both initiated by CP and initiated by Community Pharmacy</td>
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