

**Counties Manukau  
District Health Board**

**Pharmacy  
Health Services Plan**

**February 2008**

## 1.0 Current Services

Pharmaceutical care across Counties Manukau is provided by approximately 90 privately owned community pharmacies and one centralised Middlemore Hospital Pharmacy for a population of 446,000 people.

Medicinal Therapy is the most frequently used form of treatment intervention in any health practice setting. Furthermore, globally, more than half of all prescriptions are incorrect and more than half of all patients fail to take them correctly (Developing Pharmacy Practice – World Health Organisation 2006).

Pharmacists and the medicines management services they provide, are the value-added link between pharmaceuticals, prescribers and patients ensuring appropriate health outcomes are achieved with the least harm.

Within Counties Manukau, the next 20 years will experience demographics of a growing and ageing population with its greater burden of chronic illness. This will require pharmacists to work in a multidisciplinary and patient focussed environment to better meet demand and achieve the outcomes sought.

**Community Pharmacies** provide a wide scope of activities including the supply of medicines, medicines information, review of pharmaceutical treatments through to health promotion and the prescription of medicines (e.g. over-the-counter products). Some specialised services within the community are also provided by pharmacists through Primary Health Organisations (PHOs). Community Pharmacy services are currently mostly funded through revenue paid for the dispensing of prescribed medicines with a small co-payment from patients.

**CMDHB Hospital Pharmacy Services** is centrally based on the Middlemore site and encompasses both operational and clinical pharmacy activities across all CMDHB hospitals and specific clinical areas. The clinical pharmacy services include ward pharmacy, prescribing advice, chart and medication review, medicines information, health informatics, medicine advisory committee work, formulary, drug utilisation and evaluation quality audits for a range of Middlemore, Manukau and community based services. The dispensing services include inpatient and out-patient clinic dispensing, manufacturing (sterile and non-sterile) and clinical trials. The majority of medicines are currently supplied via Individual Patient Dispensing (IPD) with imprest ward stock to manage medications outside of pharmacy opening hours.

There is no contract reimbursement from the community funding, via Health Pac, for outpatient dispensing services which are provided by the CMDHB hospital pharmacy to high risk out-patients (e.g. dialysis patients, antibiotics on discharge).

Hospital pharmacy services link to every clinical service across CMDHB particularly through medical and nursing staff. There are strategic linkages with the Quality Use of Medicine (QUM) initiatives New Zealand wide to improve patient safety, in addition to Pharmac regulations and processes regarding availability of medicines New Zealand wide. This requires co-ordination of CMDHB feedback regarding new or changed changes arrangements for medicines within the community. The expansion of a QUM programme into primary care will be essential to support clinical treatment programmes and inter and intra-disciplinary teamwork.

## 2.0 Key Issues

### Quality issues and medication safety

Within both hospital and community settings there are significant and avoidable adverse outcomes as the result of pharmaceutical administration. High rates of error are reported within hospital settings. In the presence of short length of stay, high patient complexity and busyness of ward environments - there are pharmaceutical systems and processes that can be made inherently safer. Similar issues occur in community settings and in the transfer of the patients between hospital and community pharmacy.

## Cost of community pharmaceuticals

Despite major reduction in the cost of pharmaceuticals in the community, some patients cannot afford prescribed medications. In addition many patients are unable to afford over-the counter medications for minor ailments (e.g. treatment of head lice, fungal infections). Either of these situations can result in untoward health events and avoidable hospital admissions.

## 3.0 Trends and Future Directions

Internationally models of healthcare are evolving to keep patients with chronic illnesses well in the community thus reducing the demands on secondary services. The increasing complexity of medication regimes requires support by pharmacists for patients' medication understanding, self management and health promotion ('10 Year Vision for Pharmacists in NZ' 2004).

Medication Use Review, Medication Reconciliation and Medication Review (National Framework for Pharmacist Services 2007) are initiatives growing in acceptance in New Zealand and indeed in CMDHB. These services will be developed further in CMDHB to smooth transition of a patient between primary and secondary care.

Integration of the existing CMDHB medication reconciliation programme with the current clinical information system (Concerto®) will improve the quality of prescription information documented in the electronic health record on admission and discharge. Detail about a patient's hospital medication use and those medications discontinued, with reasons, will be made available through Electronic Discharge Summaries.

In the UK targeted funding of pharmaceuticals to manage some minor ailments (e.g. treatment of nits and scabies, barrier and emergency contraception, smoking cessation counselling and nicotine replacement therapy) has significantly avoided potentially greater health issues. This service has been provided by community pharmacists.

Dispensing volumes are expected to increase dramatically in the future as the result of the "baby boomer" population reaching older ages and due to the increased growth of the CMDHB population. This will require the redesign of pharmaceutical supply and distribution systems, including the adoption of automation technologies.

Automation of pharmaceutical supply is highest in the USA and the UK with improved medication safety in dispensing and administration including use of barcode tracking. The trend is to move from large centralised pharmacy facilities to smaller automated medication stores that are managed centrally.

Within CMDHB there is potential to utilise automation technology, however patient centred clinical pharmacy services must remain the focus for future service development.

In the hospital the implementation of automated electronic medication dispensing systems (Pyxis™) within clinical areas will reduce pharmaceutical wastage and the resource intensive costs associated with managing Individual Patient Dispensing ("IPD") and imprest stock. Pyxis™ is also believed to reduce medication error associated prescribing; dispensing and administration with the prescription validated by a clinical pharmacist and directed medication selection by an identified nurse. The Pyxis model is associated with new capital lease costs that would be borne by each clinical service, balanced against savings from reduced medicines wastage. The change management required for Pyxis integration over a 5 to 8 year period will require that the existing IPD model remains in some clinical areas for the foreseeable future.

To ensure enhanced stock management and also improve patient safety, bar-coding of all medications - starting with receipt into the pharmacy system and ending at time of medications being administered to patients is also a key future goal and a trend evolving in Europe and the USA.

Electronic prescribing is widely used in the UK and USA and is linked to the pharmacy systems and medication reference software to provide medication information and decision support in the clinical setting. This information enhances appropriate prescribing and provides the opportunity for all prescribers to follow approved clinical pathways.

The planned regional implementation of the Universal Data Model (UDM) will provide a common source of drug data to support the consistent management of medication information and sharing of information between systems.

Further development to full electronic management of prescription information (electronic prescribing, order validation, automated distribution and bed-side bar-coded administration) with integrated decision support software will provide vital patient safety benefits in addition to the ability to track and monitor drug utilisation. Similarly an integrated clinical information system between CMDHB hospitals, community pharmacy and GPs could improve medicines safety but this a long term strategy currently under discussion.

These further developments are noted in the Regional Information Services Strategic plan (RISSP) and while there is not confirmed funding or implementation strategy in place at this time, planning is in progress.

CMDHB hospital and community pharmacists' duties will follow the overseas trend to include practitioner, prescriber and specialist clinic roles that target 'at risk' groups of patients. This role development is mirrored in the NZ Medicines Strategy 2007. These new roles will require recognition and competence credentialing from the New Zealand pharmacy professional bodies, although the legislative steps have already been put in place. Once pharmacist prescribers are recognised professionally and legally there are opportunities for designated prescribing by suitably qualified pharmacists as dependant and independent practitioners. Examples are: warfarin maintenance clinics and repeat prescriptions for certain patient groups.

The CMDHB Medicines Information Service provides unbiased, accurate, appropriate and current evidence based information on medicines for the Counties Manukau region. This service needs to be easily accessible to health professionals and consumers and should involve centralised delivery models (e.g. national or regional) similar to those in Australia and the UK. Further development of educational activities that understand the cultural requirements of the CMDHB population, coupled with medicines information and support, will improve understanding and safe use of medications.

Pharmacy Services is focused on the safe and appropriate management of medicines. This shift of focus from the traditional supply of pharmaceuticals is driving all of the key directions in the short and longer term. Provision of a minor ailment service funded by the DHB and provided by community pharmacists would prevent simple illnesses from becoming severe enough to require hospitalisation (e.g. diabetics foot care, emergency contraception, head and body lice).

Medication Usage Review and Medication Review in collaboration between the pharmacist, patient and prescriber would ensure concordance of the medication regime to achieve the best outcome for the patient. With the development of an integrated electronic system across community and hospital care, a prescription repository of patient's community dispensed medications would be used by the admitting hospital doctor as a reference for medication history.

Medication reconciliation within 24hours of point of patient transfer. This is a process where charted medications are reconciled with the current regular medications taken by the patient. Charting errors that are detected are referred to the clinical team for review or consideration. This would significantly reduce the likelihood of error and would assist hospital medical staff, General Practitioners and pharmacists to avoid errors.

Pharmaceutical supply within the hospital setting will change from the excessively wasteful individual patient dispensing (IPD) to the more controlled environment of the automated Pyxis medstation. A three site pilot at Middlemore Hospital from mid 2008 to an eventual roll-out to all hospital clinical areas is planned over a five to eight year period. This project will prevent wastage, have available an extensive range of medications at the ward site, provide a record of administered medications to the individual patient, allow validation and clinical checks of the medication order by a pharmacist, provide central reports on stock levels from Pyxis medstation locations and prevent medication errors by the automated and restrictive drug selection mechanism.

Clinical pharmacy is well accepted within both New Zealand and internationally. Pharmacists are available in the ward setting for chart review and annotation, medication review for selected patients, attendance on clinicians ward rounds, medication and pharmaceutical advice to patients, clinicians and nurses. Clinical pharmacy will be extended during the period of the Health Services Plan.

Discharge medication history is provided accurately on the electronic discharge summary. With proposed development it is intended that the medication names are populated from the pharmacy system or from the UDM database so that a standard medication format is used throughout the hospitals of the DHB. This will further reduce errors and improve the quality of service provision.

Operational pharmacy processes and facilities need to comply with the New Zealand Medicines and Medical Devices Safety Authority (Medsafe) and also relevant legislation associated with controlled access, storage and release of medicines. There are advantages to co-locating both the clinical and operational pharmacy services within each of the CMDHB hospital-based facilities (i.e. Middlemore Hospital and Manukau campus) to enhance communication between staff, continuity of medicines management processes and opportunities to share facilities. Some clinical pharmacy services based within patient clinical areas may be required as facilities and roles develop.

Additional CMDHB facilities required are:

- Non-sterile packing/manufacturing of medicines.
- Small volume sterile manufacturing, e.g. eye drops, reconstitution of some liquids, paediatric nasogastric feeds N.B. Bulk sterile compounding is most economically provided by a contractor.
- Lamson tube system efficient delivery of medicines as an adjunct to the designated pharmacy orderly service.
- Area for Pyxis equipment and setup.
- Possible blister packing or a unit dose requirement for rehabilitation needs.

There is a planned increase in activity at Manukau site over the next 20 years resulting long term in a five-fold inpatient bed increase. (Facilities Briefing Paper v 1.1, Sep 2007). The planned increases are in surgical electives, developments of inpatient mental health and rehabilitation beds and large increases in ambulatory care. It is estimated that a dedicated team of 15 FTE pharmacy staff will be required at the Manukau campus in a satellite pharmacy.

The Manukau satellite service facilities are required to provide a dispensary to support pharmaceutical supply to the ward and clinical areas. It is anticipated that the system of supply would be to an automated Pyxis machine in most clinical areas. For the clinical pharmacists space may be accommodated within the clinical areas and then a smaller central base would suffice for dispensary store, shared resources, training and team communication/management processes.

The proposed oncology service at the Manukau campus will require a satellite pharmacy base to manage the increased volume of cytotoxic and adjunct therapy and an estimated schedule of accommodation has been sized for the entire team's requirements, by 2020, at 100 square metres (ref: Facilities Briefing Paper Sep 2007).

An onsite retail pharmacy already exists at Middlemore Hospital. With the significant development occurring at Manukau, there is potential to improve both the collection of and compliance with, discharge medicines through an on-site public accessible pharmacy. The services would need to include clinical services in addition to the supply of medicines with these services being delivered as part of the discharge process or whilst patients are still in clinics. Use of technology should enable transfer of information to the patient's usual provider/s to facilitate continuity of care and follow up.

There is an opportunity for clinical pharmacy to increase their availability within clinical areas and engagement with the multi disciplinary teams via permanent location/significant presence within clinical areas. While this model poses challenges for recruitment and increasing specialisation of staff, there is strong evidence to support this model in terms of improved patient safety.

High level clinical pharmacy processes required:

- Assessment of clinical information (from computer systems, clinical records and clinical staff), with time typically spent assessing inpatient location at the start of the day.
- Assessment of prescribed medicine appropriateness/efficacy on the ward, including clinical staff and family liaison, ward rounds, patient reviews and other forums.

- Monitoring of medicines use from a speciality/CMDHB wide perspective (Drug Utilisation Evaluations), including a variable scope of clinical audit, collaborative development of best practice guidelines and other activities.
- Case specific and general ward query management, with clinical pharmacist escalation to Medicines Information where required.

Currently there is no integrated pharmaceutical system across hospitals and community. There is a proposal to have a data repository of community dispensing records and this is currently being addressed through the Regional Community Pharmaceutical Dispensing Repository project.

Some components for an integrated system are currently in place but significant challenges would be required to achieve complete integration. If the technology was available it could be used for improved access to dispensed information. e.g. transportable repeats, emergency supplies, medication history recording.

A Regional Pharmacy Computer project, begun in 2003, has yet to share pharmaceutical data and patient medication history between the DHBs however that is the ultimate goal of the project and should be achievable.

There is growing pressure to achieve improved quality standards across all areas involving pharmaceuticals are prescribed. The increasing complexity of medications, the ageing of the population and growing awareness of the size of the problem are focusing pharmaceutical services in hospitals and the community on clinical safety. This will change both clinical practice at the patient/clinician interface and the systems and processes for pharmaceutical administration.

Growth in CMDHB commitment to research and audit processes is likely to increase the demand for medication trial management and pharmacist involvement.

There are identified shortages in the pharmaceutical workforce, both within New Zealand and overseas, and it is necessary to investigate building efficient pathways of medication supply and to redeploy the workforce with extended clinical scopes of practice that complement the predicted shortage in GP numbers and increased complexity of medication regimes.

Safety and efficacy of medicine management is a primary goal of both the operational and clinical pharmacy service. Pharmacists and the medicines management services they provide, are the essential link between pharmaceuticals, prescribers and patients ensuring appropriate health outcomes are achieved with the least harm.

Other linkages include professional bodies for pharmacists and training institutions for both Pharmacy Technicians and Pharmacists (Auckland and Dunedin based). Course curriculum must be designed to accommodate the changes ahead.

There are opportunities for joint training (hospital and community pharmacists) as new services are developed and utilise different settings as training sites as a mechanism to improve quality, improve intra-professional relationships and develop quality mechanisms such as peer review and clinical audit.

Systems of supply and legislative controls for pharmaceuticals must be a prime focus of the development of Pharmacy Services. However, without individual pharmaceutical care no system can manage medication therapy effectively.

Pharmaceutical care must align itself to become patient focussed and delivered at the time of pharmacotherapy decision making. Pharmaceutical care is not to be interpreted in isolation and must be provided in collaboration with patients, doctors, nurses and other healthcare providers. For patients and health professionals, access to Pharmacy Services, either medicine products or pharmaceutical advice and information, must be easily accessible and understandable.

The network of community pharmacies, hospital pharmacies and pharmacists already has a service structure that can further develop over the next 20 years. Service delivery in the future will include specialised services that support primary care and improve self management.

## 4.0 Key Directions

- ✓ *Increasing focus on pharmaceutical safety.*
- ✓ *Promoting development of a funded high-needs minor ailment service for community pharmacists to avoid hospitalisation and poor health outcomes.*
- ✓ *Introduction of Medication Usage Review and Medication Review involving pharmacist, patient and prescriber.*
- ✓ *Medication reconciliation across community and hospital pharmacies.*
- ✓ *Movement to automated Pyxis medication administration system.*
- ✓ *Extending clinical pharmacy services within hospital settings.*
- ✓ *Provision of pharmaceutical services at both Middlemore Hospital and Manukau Campus with co-located clinical pharmacy and operational pharmacy services at each site.*
- ✓ *Limited sterile compounding services available on both sites.*
- ✓ *Development of a retail pharmacy at Manukau Campus to increase patient compliance and discharge planning.*
- ✓ *Development of an integrated electronic pharmaceutical system across the Auckland region.*
- ✓ *Increasing focus on using the different components of the pharmacy workforce in the most effective and efficient manner. This includes administrative staff, pharmacy technicians, pharmacists and pharmacy practitioners.*