PHARMACEUTICAL SOCIETY
of New Zealand Incorporated

NEW ZEALAND NATIONAL PHARMACIST SERVICES FRAMEWORK

2014

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Introduction

The New Zealand National Pharmacist Services Framework (the Framework) was developed in 2007 by District Health Boards of New Zealand (DHBNZ) and intended for review in 2009.

Following the dissolution of DHBNZ and subsequent discussions with District Health Boards Shared Services (DHBSS), responsibility for the framework passed to the Pharmaceutical Society of New Zealand Inc. (Society). The Society undertook to conduct the review of the Framework services and to re-present it to the health sector as the pharmacy profession's Framework of Services from the Society.

During 2013 the Society undertook a cross sector consultation on a first draft of a revised Framework of Services. A detailed survey of Medicines Use Review (MUR) pharmacist practitioners was conducted and feedback was received from individual pharmacists, National Medical and Pharmacist Organisations, General Practice Organisations, DHBs and Government Agencies.

The National Executive of the Society discussed in-depth and provided direction for the service identification and content.

In response to submissions received and survey analysis to the first consultation round, changes were made to the format, language, service descriptions and services in the Framework and were further considered by the key stakeholders workshop in May 2014.

With numerous new pharmacist services coming into mainstream provision it is important to have a reference of up to date service descriptions for funders / payers / employers and providers to refer to when choosing to provide selected extended pharmacist services to their populations.

The Framework enables flexible implementation of pharmacist services on behalf of District Health Boards (DHBs), Primary Health Organisations (PHOs) or General Practice Networks, pharmacy entities and other Healthcare entities.

The Framework enables:

- the promotion of optimal medicine-related outcomes from medicines; encouragement of multidisciplinary work practices, primary-primary and primary-secondary collaboration and integrated care
- the utilisation of the opportunity for enhanced access that community pharmacy offers for the promotion of public health and well-being and the encouragement of self-care;
- the optimisation of health by evaluating and addressing where possible, the medication management needs of local populations and individual patients;
- the development of medication management services that enhance patient choice, access and convenience and provide a positive experience for patients and other providers of healthcare;
- the provision of a range of clinically effective and cost-effective medication management services
- the development of an integrated approach to planning and commissioning of innovative medication management services that contribute to the development of primary health care and the optimisation of health outcomes regionally and nationally.
- alignment of services with specific pharmacist roles, such as those working in integrated health organisations and/or general practices.

There are two scopes of practice for pharmacists: the "pharmacist scope" and the "pharmacist prescriber" scope.

It is important to have one reference source as a Framework of Services for the health sector. All extended services in this Framework – apart from prescribing, can be provided by a pharmacist competent in the pharmacist scope of practice. Most of these extended services do have an extra element of educational qualification and/or training. Prescribing can only be carried out by a pharmacist competent in the pharmacist prescriber scope of practice.

This framework comprehensively defines pharmacist services that are available for primary care and/or secondary care sector use.

New service areas in the framework are in addition to base mandatory pharmacy services and designed to provide national consistency for users of pharmacist extended services

Health practitioner competence requirements dictate that all pharmacist services must be provided in line with appropriate standards as defined by the Pharmacy Council of New Zealand.

Background

In 2007, the Government highlighted the Optimal Use of Medicines as one of the key outcomes of The Medicines New Zealand Strategy. The Strategy noted that:

Optimal use activities are crucial to ensuring that medicines that are assessed as being high-quality, safe and effective, are chosen, delivered and used in a way that ensures their potential to improve health and prevent illness is maximised. Optimal use activities also reduce wastage, enabling resources to be used effectively.

The Medicines Strategy also recommended that the behaviours and practices to support optimal use need:

1. Prescribers and other health practitioners to:
   - Consider the most suitable and cost-effective treatment options, including non-medicinal and non-prescription alternatives
   - Consider the safety and appropriateness (including the risks and benefits) of medicine choice in relation to clinical need
   - Develop medicines plans that are mutually agreed with their patients
   - Work collaboratively with other health practitioners and services to provide continuity of care and share up-to-date information on medicines risks and benefits and best practice treatment options
   - Make services more available and provide treatment in a way that recognises the needs of individuals, including cultural differences

2. Patients taking medicines to:
   - Be active participants in their health management
   - Be able to make informed decisions about medicines
   - Understand the best way to use medicines (be 'health literate') and know where to go for information and support

3. The medicines system to:
   - Monitor and disseminate information to minimise the over-use, under-use, misuse and inappropriate disposal of medicines
   - Provide effective regulation and post-marketing monitoring, in line with international best practice, to ensure ongoing assessment of medicines safety
   - Have systems to support optimal medicines use practices, including safe medicines systems such as child-safe packaging and at-the-bedside medicines verification systems
   - Monitor and evaluate the outcomes of medicines use

Actioning Medicines New Zealand, the action plan for Medicines New Zealand provided a list of the actions which "can and will be done" to deliver Medicines New Zealand outcomes and singled out the pharmacy profession as having a key role in achieving the goals of the strategy, stating to:

Support initiatives to realise the potential of the pharmacist workforce and address the barriers to the delivery of innovative pharmacy and pharmacist services, including those identified at the health sector workshop in August 2009.

Over-arching Principles

Māori Health

An overarching aim of the health and disability sector is the improvement of health outcomes and reduction of health inequalities for Māori. Health providers are expected to provide health services that will contribute to realising this aim. This may be achieved through mechanisms that facilitate Māori access to services, provision of appropriate pathways of care, which might include but are not limited to matters such as referrals and discharge planning, ensuring that pharmacist services are culturally competent and that services are provided that meet the health needs of Māori. It is expected that there will be Māori participation in the decision making around, and delivery of, pharmacist services.

Services Linked with the Healthcare Team

The success of the services is dependent on the development and maintenance of effective therapeutic partnerships between those providing and those receiving the service. Service provision is consistent with local and national health strategies, and the pharmacist must demonstrate knowledge of and appropriate linkages with prescribing practitioners and health and/or welfare organisations, such as Government and non-Government support organisations, and secondary services, such as:

- Primary medical and nursing services, including PHO or other local organisation services
- Māori primary and community care providers
- Pacific primary and community care providers
- Consumer advocacy services, including Māori and Pacific Islands advocacy services
- Community support and home nursing services
- Non-Government organisations
- Secondary medical, surgical and rehabilitation services
- Specialised services such as Mental Health, Child health, Public health, Maternity, Oral health, Private specialists, etc.

Pharmacy Services Illustrated

Medicines Management Services:

CMM: Comprehensive Medicines Management
MTA: Medicines Therapy Assessment
CPAMS: Community Pharmacy Anticoagulation Management Service
MUR: Medicines Use Review
LTC: Pharmacy Long Term Conditions Service

CMM
For patients with complex clinical medication management needs under the care of an integrated health centre or primary health organisation

MTA Service
For patients where there are potential clinical concerns related to safety or efficacy of prescribed medications

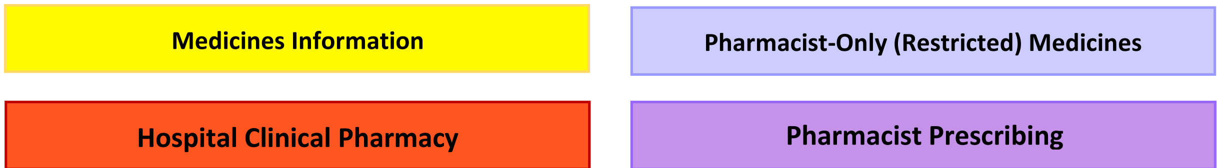
CPAMS

MUR Service
For patients with complex difficulties in understanding and adhering to prescribed medications

LTC Service
For eligible patients to optimise the supply & use of prescribed medications and to support adherence

Standard core dispensing and over the counter services with self-care advice (Incl. pharmacist-only, pharmacy, general sale classified medicines)

Other Services / Roles:



Health Promotion and Preventative Services:

Medicines Management Services

Patient-specific services that aim to ensure prescribed pharmacotherapy is understood and taken for optimal safety and efficacy.

The focus of medicines management services is to optimise the benefits and reduce harm from medicines. They involve a discussion with the patient about their medicines and delivering a range of activities to improve utilisation and manage potential and/or actual harm from their use or misuse. Issues identified through delivering medicines management services are reported back to prescribers, and those that are outside of the scope of the service or capacity/capability of the pharmacist, are referred promptly on to other health professionals for management, as appropriate.

	MEDICINES ADHERENCE		MEDICINES OPTIMISATION		
	Medicines Adherence LEVEL 1 **Long-Term Conditions LTC** Optimise supply and use of medications	**Medicines Adherence LEVEL 2** **Medicines Use Review MUR** Optimise medication understanding and adherence	**Medicines Optimisation LEVEL 1** **Medicines Therapy Assessment - MTA** Optimise medication efficacy	**Medicines Optimisation LEVEL 2** **Comprehensive Medicines Management - CMM** Optimise management of prescribed medications	**Optimising Specific Medicines** **E.g. Community Pharmacy Anti-coagulation Management Service - CPAMS**
Definition	Currently funded under the Pharmacy Services Agreement. Pharmacists will assist in the focussed management of eligible patients to optimise the supply and use of prescribed medicines and to support adherence.	A comprehensive, systematic, evaluation of a patient's understanding of and adherence to prescribed medication treatment. Pharmacist aims to improve understanding of and adherence to medicines; identifying and addressing factors linked to non-adherence behaviours as well as minimising pharmaceutical waste.	A systematic, patient-centred clinical assessment of all medicines currently taken by a patient, identifying, resolving and preventing medication-related problems as well as optimising the effectiveness of medication treatment.	An autonomous pharmacist integrated in the healthcare team providing support and advice on all matters related to the medication management of patients with complex clinical needs. May or may not include Pharmacist Prescriber Scope of Practice (see Pharmacist Prescriber section).	Specific medicines may be targeted for optimisation, guided by defined testing/assessment criteria and standing orders as appropriate. Example in current practice: CPAMS The provision of INR point-of-care testing by accredited community pharmacists and adjustment of warfarin doses within a defined range with the aid of an approved decision-support system.
For the patient	Eligible patients with chronic conditions who are prescribed regular medication treatment will receive targeted assistance to ensure they know what medications they are prescribed, what they are prescribed for and the directions for taking them. The patient has available a range of services to assist the collection and organisation of prescribed medicines, and to manage any changes.	[In addition to Level 1 goals] Patients with complex difficulties in understanding and adhering to medications (and their family/whanau) receive personalised education and support to improve self-management. This is achieved through tailored education for greater understanding of what their prescribed medications are through an agreed action plan to address adherence issues.	[In addition to MUR goals] Patients who may have concerns about the effectiveness of their medications, or may be experiencing adverse effects, will be reviewed by a clinically experienced pharmacist. Patient's medication-related problems will be identified and managed either directly by the pharmacist, or collaboratively with the prescriber.	Patients with complex clinical management needs will, as part of an integrated healthcare environment, have prescribed medication treatment continually monitored against treatment goals and regimen refined as required.	The patient receives timely, convenient and accessible management of their warfarin treatment by a community pharmacist working collaboratively with the patient's GP.

	Pharmacist is able to synchronise prescriptions and adjust the frequency of dispensing to suit the patient's needs and abilities.	The patient is able to discuss with the pharmacist: • Concerns or understanding of medicines • Access to and administration of medicines • Adherence to medication treatment.			
For the prescriber / health-system	Barriers to the prescribing, dispensing and administration of prescribed medicines are identified and a plan made to resolve these. In conjunction with prescribers where appropriate, assistance given to medicines reconciliation, synchronous prescribing and dispensing of medication. Minimises duplicate prescribing and resupply of treatment occurs on a regular, rather than ad-hoc basis.	Supports patients to better understand and adhere to the prescribed regimen. Targeted to patients who are experiencing difficulties in understanding the purpose of and/or adhering to, prescribed treatment are provided with additional education and assistance with management; and/or patients initiated on new or high-risk medicines. Health beliefs or behaviours contributing to non-adherence are identified and an agreed action plan is developed with the patient to address these.	Patient's prescribed medication regimen is collaboratively reviewed against treatment goals with the prescriber, in the context of identifying, resolving and preventing medication-related problems; and optimising the therapeutic benefits of prescribed medication. Pharmacist discusses aspects of adherence and utilisation of prescribed therapy with the patient. This is summarised and a care plan is developed with the prescriber based on therapeutic priorities.	The pharmacist is an integrated member of the prescriber's wider healthcare team and works autonomously within the team providing medicines management support and advice at an individual and practice population level.	The pharmacist actively contributes to the primary care of patients by reducing the burden of anticoagulation management whilst keeping the GP fully informed of results obtained and dosing management provided. Prescriber is notified directly of any patients with results falling outside set parameters. Provides improved accessibility and convenience for patients. Improved multidisciplinary management of patients taking warfarin. Improve multidisciplinary management of patients prescribed warfarin in the community
Training / Accreditation	Registered Pharmacist with no additional qualification or training required. Some activities may be completed within an Intern Pharmacist Scope of Practice.	Standards-based Medicines Use Review training & accreditation. Formally Assessed against Pharmacy Council Medicines Use Review Standards. MUR pharmacists require knowledge and skills in behavioural change management.	Portfolio of evidence submitted for accreditation and formally assessed against PSNZ Medicines Therapy Assessment Standards. MTA Standards require pharmacists to have defined pharmacotherapeutic knowledge and skills at a minimum post-graduate certificate level (or equivalent) plus at least TWO years patient orientated experience in a hospital, community or primary care setting post- registration.	MTA Standards minimum level expected. Experience, qualifications, skills and knowledge as considered appropriate to the role being fulfilled as a clinical pharmacist employed as an integrated member of a healthcare team.	Formally assessed accreditation training. Biennial recertification
Specific Service Standards	Pharmacy Council of New Zealand Competence Standards. Service delivered by all pharmacies as per the Community Pharmacy Services Agreement.	Medicines Use Review Competence Standards set by the Pharmacy Council of New Zealand.	PSNZ Pharmacist Medicines Therapy Assessment Standards (endorsed by the Pharmacy Council of New Zealand).	MTA Standards in addition to any defined in accordance with employment agreement with healthcare practice	Standard Operating Procedure CPAMS Standing Order Delivered as per the Community Pharmacy Services Agreement.

Eligibility	Patients who: • Have a diagnosed long-term condition as described in the LTC Service Patient Eligibility Assessment Form • Does not adhere or genuinely has difficulty adhering to their medicines regime, either because of the complexity of that regime or because of their personal or long-term condition's characteristics; and • Have a score of at least [20] following assessment using the LTC Service Patient Eligibility Assessment Form.	Patients living independently in the community who have one or more chronic disease states and meet one or more of the following conditions: • Taking three or more medicines and/or 12+ doses per day • Have multiple prescribers • Have had a recent admission to hospital (especially if there was a medicine change) • Are taking or about to commence taking medicine(s) with a high risk of adverse effects, narrow therapeutic index and/or requires therapeutic monitoring, or is suspected of being inappropriately used. • Have a particular medicine related problem e.g. adverse reaction, non-adherence. • Are non-adherent or unable to manage their medicines • Have literacy or language difficulties, dexterity problems, impaired sight, or cognitive deficiencies that impact on their ability to manage medicines.	Patients who have one or more chronic disease states; two or more co-morbidities; and meet one or more of the following conditions: • Taking four or more medicines and/or 12+ doses per day • At increased risk of medicine-related problems • Are experiencing or are at risk of experiencing sub-optimal response to pharmacotherapy • Have experienced significant changes in their medicine regimen during the last 3 months • Taking or about to commence taking one or more medicines with a high risk of adverse effects • Have signs/symptoms of a medicine adverse effect • Are taking medicine(s) with a narrow therapeutic index and/or requires therapeutic monitoring, where sub-therapeutic or toxic effects are suspected.	None specified. Patient population service by the practice.	Patients are referred by a Medical Practitioner and consent to registration in the Community Pharmacy Anti- coagulation Management Service. Stable and Unstable INRs may be managed. Patients must: • be referred by a Medical Practitioner who delegates point-of-care testing to a community pharmacy service; and either: – be taking warfarin medication; or – be requiring warfarin loading and initial stabilisation; or – be overlapping warfarin medication with low molecular weight heparin (LMWH); • be mobile and able to access the services Exclusions: Patients with acquired or congenital coagulation disorders (such as anti-phospholipid syndrome, Protein C deficiency) and/or those receiving active anti-neoplastic treatment. Refer to service specification. Patients who are non-compliant and/or have not attended the service without appropriate explanation within 6 weeks.
Restrictions / Limitations	As per LTC Access Criteria Aged residential care excluded. Activities to address adherence and understanding focus at the time of dispensing.	As per eligibility criteria. Issues identified that are beyond the adherence and education scope of the service and/or capability of the pharmacist to resolve, require referral to other pharmacist Medicines Management Services (e.g. MTA), or other Health Practitioners.	Medicines Review Service Standards require pharmacists to recognise personal limitations, to work within these and to recognise need for, and facilitate patient referral to another health professional when appropriate.		Standing Order parameters. Mandatory review by Medical Practitioner if INR is <1.5 and >4.0
Service Linkages	Regular engagement, as deemed appropriate or agreed, with members of the patient's multidisciplinary care team, in particular, engagement with their key medical practitioner(s).	Patients may self-refer into the service, or referrals may come from their usual community pharmacist, prescribers, hospital or primary-secondary care liaison pharmacists,	In most cases it is expected that MTA referrals will be initiated from a recommendation of a member of the patient's healthcare team.	Referrals not specifically required as the service is delivered by a pharmacist who is a fully integrated member of the healthcare team.	▪ A strong professional relationship must be in place between the Medical Practitioner and

		Primary Health Care Nurses, Nurse Practitioners, and/or other healthcare providers. For the provision of Medicines Adherence Services there will not necessarily be access to clinical information and the interaction and intervention is largely with patients rather than providers. Pharmacists must demonstrate knowledge of and appropriate linkages with prescribing practitioners and health and/or welfare organisations, such as Government and non-Government support organisations, and secondary services.	Pharmacists providing MTA services often work as part of a multidisciplinary team to optimise the selection of medicines for and the utilisation of medicines by individual patients, with reports and recommendations going to the GP and where available, entered into the shared care record. Service is dependent on the development and maintenance of effective therapeutic partnerships between the various health professionals involved in an individual patient's care along with the patient themselves and their family / whanau / caregivers. The MTA pharmacist will recognise national and regional healthcare priorities and strategies and deliver MTA services within the context of these.	Reports and recommendations are sent to the GP and where available, entered into the shared care record.	Pharmacy/Pharmacist providing this Service. ▪ The Pharmacy must have the appropriate secure IT connection to allow electronic linkage with general practice. ▪ In addition to the calibration supplied by the manufacturer the pharmacy arranges quality assurance reviews with an agreed local laboratory in each DHB and/or an external quality assurance provider.
Setting	Community Pharmacy	Community Pharmacy Hospital Pharmacy PHO/Integrated Health-based Pharmacists Private consultant practitioners Service may be delivered in other settings as appropriate to the patient e.g. Patient's home, marae, 'clinics'	Community Pharmacy Hospital Pharmacy PHO/Integrated Health-based Pharmacists Private consultant practitioners Service may be delivered in other settings as appropriate to the patient e.g. Patient's home, marae, 'clinics'	Integrated Health Centre Primary Health Organisation General Practice Private consultant practitioners Service may be delivered in other settings as appropriate to the patient e.g. Patient's home, marae, 'clinics'	Community Pharmacy Must be provided from premises that conform to relevant standards issued by the Ministry of Health or PSNZ.
Reporting	Regular engagement (as deemed appropriate), with members of the multidisciplinary care team in particular medical practitioner(s), in order to provide members with information about the patient's progress in improving management of their medications. Reporting into integrated health record as appropriate.	Provision of a record of all current medicines to the prescriber; and to the patient unless practical circumstances dictate that it would not be beneficial Reporting of suspected significant adverse medicine effects or therapeutic issues to prescribers and/or entered into the shared care record where available.	Pharmacist is expected to have access to patient clinical records and will contribute to these and/or report into the integrated health record as appropriate. MTA Standards require pharmacists to practise effective working relationships within the multidisciplinary healthcare team.	Reporting into the integrated health record In accordance with practice policies.	• INR results and dosing recommendations reported to prescriber via decision support software (i.e. 'INR Online'). • Pharmacy reports information in accordance with the Pharmaceutical Transactions Data Specification, the Procedures Manual, and the terms and conditions set out in the service agreement. • Quarterly Reporting

Service Activities / Outputs	**Medicines Information:** Provide information about prescribed medicines to supplement dispensing advice. **Medicines reconciliation:** Obtaining the most accurate list of medicines, allergies and adverse drug reactions and comparing this with the prescribed medicines and documented allergies and adverse drug reactions. Any discrepancies are documented and reconciled. **Synchronisation:** Pharmacist helps coordinate prescribing written by all prescribers who have the care of the patient to assist regular supply of medicines and accommodation of regimen changes. **Reminders:** Utilisation and individualisation of various technologies and services aimed at assisting patients' adherence. **Adherence support:** assists the patient to adhere to and persevere with their medicines regime and to manage any prescribed changes. **Medication Management Plan**: a living, long term record that outlines how the pharmacist is working with the patient to improve medicines adherence over time. **Dispensing services, with dispensing frequency tailored to need:** Pharmacists manage the frequency of dispensing in such a way to assist adherence, convenience (to the patient and prescriber(s) and allows regular treatment monitoring and clinic appointments.	Includes that as described for LTC Services with the exception of dispensing services. Detailed assessment of level of understanding of prescribed treatment and supplementing knowledge gaps as required. Assessment of level of adherence to prescribed medications and reasons or behaviours behind non-adherence. Formulation of an agreed action plan with the patient to address adherence issues. Formal referral and report to other health professionals, of issues identified beyond the scope of the service or pharmacist. Removal of out of date medicines and medicines that are no longer required (with permission) Provision of health behaviour changing strategies aimed at improving lifestyle factors.	As for MUR Services, in addition: • Assessment of the level of adherence in the context of the potential effect on clinical outcomes. • Assess clinical status based on all available information, including clinical notes. • Review appropriateness of therapy and compare against alternative therapy options as appropriate • Review cost-effectiveness of therapy • Identify and evaluate actual and potential medicine therapy problems • Negotiate treatment goals and timelines for attainment of goals with both patient and medical practitioner. • Reporting of suspected significant adverse medicine effects • Formulate and document a pharmaceutical care plan • Contribute to multidisciplinary team on the formulation and documentation of a comprehensive care plan, and to assist the team in modifying the care plan based on regular assessment of the patient's status. • Provision of health behaviour changing strategies aimed at improving lifestyle • Recommend therapeutic medicine monitoring using target concentration intervention as appropriate. • Provide accurate and timely medicines information to health professionals and patients.	As for MTA Services, in addition to any applicable criteria described in an employment agreement. • Comprehensive clinical assessment of the safety and efficacy of medication treatment against therapeutic goals and in accordance with applicable guidelines and/or best practice. • Proactive advice to prescribers and the healthcare team on medication management options including appropriate monitoring of treatment • As applicable, support in the prescribing of medications in accordance with Pharmacist Prescriber scope and area of practice. • Provision of medicines information services, as applicable to role.	• Assess patient history / symptoms, or factors that may influence the results (e.g. a missed dose of warfarin) • perform INR test as per device and decision support instructions • warfarin dose adjustment supported by decision support tool • advise patient of INR result and new dose of warfarin • provide counselling and education about warfarin • provide the Medical Practitioner with results and changes to the warfarin regime. • Request medical review by Medical Practitioner if INR exceeds limits of advice • contacting Medical Practitioner directly if concerned about the patient's symptoms, results, or the dose recommendation; • maintain record of care & management plan • participation in quality assurance programme; • audit anticoagulant management • auditing compliance for timeliness of testing to identify Patients with compliance issues • record incidence of adverse events (in particular the incidence of bleeding) including hospital admissions.

Health Promotion and Preventative Services

Services for individuals and/or populations utilising the accessibility and knowledge of pharmacists to improve understanding of medicines and to contribute to public health programmes and/or health targets.

	Health Education Services	Immunisation Services	Screening and Intervention Services
Definition	Services provided to individuals or populations of patients in specified/targeted health areas as part of locally or nationally coordinated DHB, PHO or Ministry approved public health programmes. Pharmacist-provided health education services may include the identification of individual or groups of patients to whom specified health information should be provided. Specifications for any individual service would be developed in accordance with delivery requirements and service aims. Examples of such services might include immunisation promotion, smoking cessation, self-care of medicines, cardiac rehabilitation (focussed on medicines use), brand switch counselling, diabetes medication use, mental health medication use, administration requirements for medications (e.g. use of insulin pens, asthma inhalers and spacers etc.), marae-based medication/health education for Māori.	Pharmacist vaccinators contribute to and enhance the success of local and national immunisation programmes through utilising their public accessibility to: ▪ Administer funded and unfunded vaccines to eligible people. ▪ Reduce demand on other primary healthcare providers for vaccination services for people ineligible for funded vaccines. • Increase population uptake of immunisation. A pharmacist vaccinator has successfully completed a Ministry of Health-approved vaccinator training course and subsequent independent clinical assessment in accordance with the Immunisation Standards. Pharmacist vaccinators undertake the same training and accreditation as other authorised vaccinators but may administer those vaccines which have been classified as being able to be administered by a registered pharmacist who has successfully completed a vaccinator training course approved by the Ministry of Health and who is complying with the immunisation standards of the Ministry of Health, without the need for a prescription or standing order. Documentation of immunisation, reporting and notification in accordance with the Immunisation Standards and patient confidentiality requirements.	Targeted health screening/monitoring utilising testing procedures available and appropriate for a pharmacy setting, that integrates with national and/or local health promotion activities and strategies (as available). Examples may include: cholesterol, gout, glycated haemoglobin, blood glucose, blood pressure measurements, and screening for infectious disease (e.g., Group A Streptococcus, chlamydia), among others. Result of screening measurement tool directs course of action which may include: • referral for full medical assessment/management • provision of a pharmacist-only medicine • provision of a prescription medicine in accordance with a standing order, or • data collected provided into a multidisciplinary shared-care plan Specifications for any individual service would be developed in accordance with delivery requirements and service aims while also considering the National Screening Unit's Principles of screening and screening assessment criteria. Services will be delivered in accordance with the HDC Code of Health and Disability Services Consumers' Rights, including the right to make an informed choice and give informed consent.
For the patient	Patient receives targeted education and advice on the presentation and management of specific health topics, utilising the accessibility and knowledge of their pharmacist.	Patient benefits from convenience and accessibility of pharmacists and receives immunisation(s) for the prevention of disease in accordance with health needs. Populations and individuals attending a pharmacy will receive health promotion information on the benefits of immunisation in general, for the prevention of disease. Where immunisation needs are outside of the pharmacist-delivered immunisation service, pharmacists will refer patients to their GP.	Individuals or targeted populations receive evidence-based health screening for specific health conditions which present a risk of harm. Results are managed in accordance with appropriately developed guidance and/or standing orders in order to mitigate that harm.

For the prescriber / health system	Minimise barriers to achieving health goals by utilising the accessibility and knowledge of pharmacists, individuals or populations of a target group receive specific education aimed to improve understanding and ultimately health outcomes.	Pharmacist vaccinator workforce actively contributes to national and local immunisation targets through increasing accessibility of vaccines. Pharmacists also actively contribute to immunisation promotion and are a readily accessible health-professional source of information and advice on vaccine-preventable disease.	Pharmacist workforce actively contributes to national and local health screening activities. Where appropriate, such services may include aspects of management and/or referral to other practitioner.
Training / Accreditation	None specified. As appropriate to the service, in accordance with scope and standards of practice.	Pharmacist vaccinators must successfully complete a Ministry of Health-approved vaccinator training course and subsequent independent clinical assessment, then maintain their authorisation in accordance with the Immunisation Standards. The Pharmacy Council Statement on Pharmacist Vaccinators states that pharmacists who offer a vaccination service must undertake resuscitation training equivalent to that of NZRC Rescuer Level 4. The following five skills must be included in the training: infant, child and adult Cardiac Pulmonary Resuscitation (CPR) including mouth-to-mouth, mouth-to-mask and the management of choking	As appropriate to the service, in accordance with scope and standards of practice.
Specific Service Standards	Standards for any individual service would be developed in accordance with service aims and delivery requirements.	Ministry of Health Immunisation Standards National Guidelines for Vaccine Storage and Distribution Pharmacy Council Statement on Pharmacist Vaccinators Guidance described in the Ministry of Health Immunisation Handbook	Standards for any individual service would be developed in accordance with service aims and delivery requirements. Pharmacist screening and intervention services will be evidence-based and any medical devices used will be of appropriate standard and quality.
Service Users	Target population or patient groups as defined by DHBs, PHOs, Ministry of Health and/or other local or national public health programmes.	Target population or patient groups as defined by the National Immunisation Schedule and those self-referred patients who are eligible for vaccination.	Target population or patient groups as defined by DHBs, PHOs, Ministry of Health and/or other local or national public health programmes.
Eligibility	Eligibility criteria for any individual service would be developed in accordance with service aims and delivery requirements.	As per Immunisation Standards, the indications for the respective vaccinations, and as per the medicines classification for those vaccines classified as able to be administer by pharmacist vaccinators.	Eligibility criteria for any individual service would be developed in accordance with service aims and delivery requirements.
Service Linkages	To be defined in accordance with service aims and delivery requirements. Examples of service linkages may include: • Consumer advocacy services, including Māori and Pacific Island advocacy services. • DHB public/population health services, Ministry of Health public health campaigns, PHO health promotion programmes. • Pharmac, Māori Health providers, GPNZ or similar.	Pharmacists to have effective links with the following services: • Local immunisation coordinators • The Immunisation Advisory Centre (IMAC) • General practice • Local Medical Officers of Health • Local DHB • Pharmac Pharmacists to notify the patient's general practitioner of administration of vaccines, with the consent of the patient. Pharmacists will record information in the National Immunisation Register as this becomes available.	Screening and intervention programmes delivered in a collaborative manner through strong links to general practice and the wider multidisciplinary team where appropriate. Pharmacists will have defined outcomes that are managed appropriately within the service (e.g. through the provision of treatment), or will refer to other services for comprehensive assessment or management as agreed with relevant members of the wider healthcare team.

Setting	• Services will be delivered in a facility and setting appropriate to the target patient or population groups. • A private area must be utilised for discussions with patients and their family/whanau. • Services may be delivered by pharmacists working in community or hospital pharmacy, PHO/Integrated Health-centres or as private consultant practitioners.	Community pharmacy and/or offsite from a community pharmacy when provided in accordance with relevant guidance and standards Pharmacist Immunisation Services must be provided from premises conforming to relevant standards issued by the Ministry of Health and/or The Pharmacy Council of New Zealand. Facilities at which vaccines will be stored and administered by the pharmacist will provide for cold chain storage as well as privacy and management of adverse events (including anaphylaxis). Facilities will comply with the requirements of the Immunisation Standards and Guidelines for Vaccine Storage and Distribution. Pharmacists will provide the service in a manner that enables the patient to understand evidence-based information about vaccines and the illnesses they prevent. Pharmacists will obtain and document informed consent to administer vaccines on that basis and in accordance with the individual requirements of the vaccine(s).	Delivered in a facility and/or settings appropriate to the target patient or population groups and in accordance with any standards or codes of practice.
Reporting	Requirements developed in accordance with specific service aims and delivery requirements.	General practice to be notified of the administration of a vaccine under the service, with the consent of the patient. National immunisation register as available. Documentation of the consent, administration, storage and transport of all immunisations in accordance with Ministry of Health requirements.	Requirements developed in accordance with specific service aims and delivery requirements, in consultation with all members of the healthcare team with service linkages.
Service Activities / Outputs	• Provision of generic, non-specific population-based education to patients or other health professionals • Provision of specific education targeted at eligible individuals • Provision of health behaviour changing strategies aimed at improving lifestyles of individual patients.	Safe provision and administration of approved vaccines to patients. Active participation in the promotion and education of immunisation as a public health benefit. Documentation of vaccination, reporting and notification in accordance with patient confidentiality requirements. Enhanced national uptake of immunisation.	Provision of targeted screening and intervention for diseases or illnesses in accordance with defined national or local public health strategies or initiatives and following appropriate guidelines and best practice.

Pharmacist Medicines Information Services

Services utilising pharmacists' specialised knowledge of pharmacotherapy to support patients, health professionals, and health providers with the optimal use of medicines.

<table>
<tr><th></th><th>Pharmacist Medicines Information Services</th></tr>
<tr><td>Definition</td><td>Medicines Information is the provision of evidence-based information about medicines and advice on their therapeutic use.

The focus of Pharmacist Medicines Information Services is on information provision to healthcare providers that enables those providers to optimise their effective utilisation of pharmaceuticals.

Medicines information services aim to:
• assist providers with the rational and quality use of medicines for a given patient, patient group or population
• locally implement national or regional appropriate use of medicines campaigns that aim to impact on the demand for certain medicines or classes of medicines
• reduce the risk of adverse medicine events associated with the transition between providers of health services
• provide independent, accurate and relevant medicines information to health professionals, thus contributing to patient care and the optimal use of medications

Medicines information services may reactively respond to specific requests for advice, as well as proactively provide guidance on specific topics.</td></tr>
<tr><td>For the prescriber / health-system</td><td>Prescribers and other healthcare professionals are provided with independent, evidence-based information about medications and advice on their therapeutic use and optimisation.</td></tr>
<tr><td>Training / Accreditation</td><td>New Zealand Hospital Pharmacists Association. Medicines Information Group: Medicines Information Training Manual
Recommended: Post-Graduate Certificate in Pharmacy (Endorsed in Medicines Management)

Pharmacists providing this service will have relevant post-graduate clinical qualification(s) or work experience to demonstrate general pharmaceutical knowledge in core areas and/or specialist pharmaceutical knowledge in one or more defined areas.</td></tr>
<tr><td>Service Users</td><td>General practitioners, specialists, registrars, house officers, midwives, dentists, veterinarians, optometrists, nurse practitioners and any other prescribers or health professionals.
Health service providers concerned with the optimal and cost-effective use of medicines.</td></tr>
<tr><td>Restrictions / Limitations</td><td>In accordance with specific service aims and delivery requirements.</td></tr>
<tr><td>Service Linkages</td><td>It is intended that Pharmacists will provide Medicines Information Services that are consistent with Government health strategies.
As appropriate, the service may provide links between members of the multidisciplinary healthcare team, and/or identify clinical situations requiring more advanced assessment or interpretation.</td></tr>
<tr><td>Setting</td><td>Specialist hospital medicines information centres
Hospital pharmacies
PHOs/Integrated health centres utilising appropriately qualified pharmacists (e.g. specific MI pharmacist, CMM pharmacists)
Private consultant practitioners</td></tr>
<tr><td>Reporting</td><td>Quality assurance procedures to be in place to help ensure services are of a sufficiently high standard.
Examples include standard operating procedures, proactive peer review prior to provision of information, induction training for new staff, retrospective audits</td></tr>
<tr><td>Service Activities / Outputs</td><td>Non-exhaustive list of activities may include:
Provision of information and advice either retrospectively in response to a direct enquiry, or prospectively by issuing general guidance on a particular topic. Pharmacists providing this service interpret and apply evidence-based information on a population or individual patient basis to:
• Outline the appropriateness of medicine options for a patient according to their individual clinical status
• Provide advice on the cost effectiveness of medicine options
• Facilitate best practice medicines utilisation through the development and/or implementation of localised guidelines, analysis and feedback of medicines utilisation data, educational interaction with prescribers and other providers of healthcare, and the provision of objective, comparative and unbiased medicines information
• Facilitate the smooth transition between providers of health services.

As appropriate, pharmacists providing the service may generate and utilise reports (e.g. medicine utilisation/dispensing history) to assist:
• Other providers of healthcare with individual patient management and quality use of medicines
• Hospital admission and/or discharge management, including managing prescriptions from multiple providers for individual patients.

Appropriate use of medicines campaign participation
Pharmacists providing the service to actively participate in national or regional appropriate use of medicines campaigns to address the demand for certain medicines, as determined by the DHB or PHOs.</td></tr>
</table>

Pharmacist-Only (Restricted) Medicines

Pharmacist-only medicines are available for those patients assessed as appropriate for supply and are mostly unfunded if not supplied in accordance with a prescription. Opportunities are available for specific medicines to be funded for those patients meeting appropriate assessment criteria, in accordance with a nationally or locally delivered health programme.

	Pharmacist-Only (Restricted) Medicines
Definition	A **pharmacist-only (restricted) medicine** is a medicine classified as such under the Medicines Regulations that may only be sold by retail by a pharmacist in a pharmacy or hospital; or in accordance with a standing order. Pharmacist-Only Medicines are regarded within the profession as pharmacist-prescribed medicines. Accordingly, the pharmacist is expected to undertake an appropriate consultation with the patient, fully considering any specific practice guidelines or protocols prior to making the decision to supply a pharmacist-only medicine. References to 'pharmacist-only' medicines also includes those medicines which are classified as prescription medicines "except when supplied by a registered pharmacist…" or words to similar effect. Such medicines remain classified as 'prescription medicines' but may be supplied by pharmacists under conditions defined in the classification statement for that medicine. Pharmacists have special legislative and professional responsibilities in controlling the supply, storage, recording and advertising of these medicines. Pharmacist-only medicines are not usually funded by the health system unless listed in the Pharmaceutical Schedule and prescribed by an authorised prescriber; or specific medicines are funded as part of a local healthcare initiative (such as the Emergency Contraceptive Pill).
For the patient	Patients have the ability to obtain readily-accessible, efficacious medicines, where the sale is supervised by a health professional who identifies the need and appropriateness for the medicine, and gives individualised information and advice. Patients are referred to their general practitioner where management using a pharmacist-only or other over the counter medicine would be inappropriate.
For the prescriber / health system	Ailments suitable for management through advice and/or the use of a pharmacist-only medicine can be cared for by pharmacists. However more serious ailments beyond the scope of over the counter management are referred for medical assessment.
Training / Accreditation	Registration within the Pharmacist Scope of Practice (or Intern Pharmacist Scope of Practice when under the supervision of a Pharmacist) Training must be successfully completed where the classification of a medicine, or Pharmacy Council standards requires it. Training and accreditation is a mandatory requirement for the provision of trimethoprim, levonorgestrel (emergency contraception) and vaccines by pharmacists.
Specific Service Standards	• Pharmacy Council Code of Ethics for Pharmacists • PSNZ Pharmacy Practice Handbook • Standards, Guidelines and/or Protocols for the supply of specific pharmacist-only medicines as available when defined by the Pharmacy Council and/or Pharmaceutical Society of NZ. • Pharmacy Council Protocol for the Sale or Supply of Pharmacist-Only Medicines for Chronic Conditions (POMCC) Pharmacists must have procedures to ensure that pharmacy staff always refer patients to the pharmacist when: • a Pharmacist-Only Medicine is requested; or • a Pharmacist-Only Medicine could be a suitable treatment for symptoms described by the patient.
Service Linkages	Refer to or consult with the patient's medical practitioner and/or other health professionals as appropriate and agreed to by the patient.
Setting / Facilities	Sales of Pharmacist-Only Medicines may only be made from a registered pharmacy or from a hospital. A private area that enables confidential patient consultations to be undertaken is required.
Reporting	Medicines Regulations require the documentation of the sale of pharmacist-only (restricted) medicines and set out the details which must be recorded in the register of pharmacist-only medicines. Pharmacists are encouraged to record provision of pharmacist-only medicines using electronic methods and process the sale through their computers as they would when dispensing a prescription. The Medicines Regulations require recording of the following information: • date of transaction; name and address of purchaser (if the purchaser is not the patient, it is recommended that the details of the sale are also recorded in the patient's history); name and quantity of medicine sold; name of pharmacist making the sale.
Service Activities / Outputs	Assessment of the condition to be treated: • history of the signs/symptoms or disease process • current medications and any other treatments • patient's known risk factors e.g. allergies, pregnancy, contraindications and precautions of the medication Assessment of the appropriateness of the pharmacist-only medicine supply considering potential adverse reactions, interactions and side effects; while also considering possible non-medication therapy or referral for further medical attention. Provision of patient-individualised advice using verbal and written information on: adverse effects; precautions; correct use and storage of the medicine; when the patient should seek medical advice; and the availability of the pharmacist for further information if required.

Pharmacist Prescribing

Prescribing of medicines generally serves two purposes:

- To permit the supply of a medicine which, due to its classification under medicines legislation, requires written authorisation.
- To access funding for treatment with that medicine

(Some of the descriptions below are taken from the Pharmacy Council of NZ Standards and Guidelines for Pharmacist Prescribers).

	Pharmacist Prescribing
Definition	**The Pharmacist Prescriber is a role defined by the Pharmacist Prescriber Scope of Practice and an individual's area of practice.** Designated Pharmacist Prescribers have specialised clinical, pharmacological and pharmaceutical knowledge, skills and understanding relevant to their area of prescribing practice. This allows them to provide individualised medicines management services, including the prescribing of medicines to patients across a range of healthcare settings and models. Pharmacist Prescribers work in a collaborative health team environment with other healthcare professionals and are not the primary diagnostician. They can write a prescription for a patient in their care to initiate or modify therapy (including discontinuation or maintenance of therapy originally initiated by another prescriber). They can also provide a wide range of assessment and treatment interventions which includes, but is not limited to: • Ordering and interpreting investigation (including laboratory and related tests). • Assessing and monitoring a patient's response to therapy. • Providing education and advice to a patient on their medicine therapy. The Pharmacist Prescriber must prescribe within the limits of their professional expertise and competence (both clinical and cultural) and ethical codes of practice. They are responsible and accountable for the care they provide.
Training / Accreditation	Postgraduate Certificate in Clinical Pharmacy in Prescribing (University of Auckland), or Postgraduate Certificate in Pharmacist Prescribing (University of Otago) The pre-requisite qualification for entry into the prescribing qualification is a post-graduate Diploma in Clinical Pharmacy or equivalent, which must include at least 600 hours of applied pharmacotherapy. Pharmacists must also have at least three years of recent and appropriate post registration experience working in a collaborative health team environment Registration with the Pharmacy Council of New Zealand in the Pharmacist Prescriber Scope of Practice. RegPharmNZ(Prescriber) Standards and Guidelines for Pharmacist Prescribers requires pharmacist prescribers to *actively participate in the review and development of their prescribing practice, and in the critical appraisal of information to improve patient care.* In particular to: • Participate in Continuing Professional Development (CPD) to maintain quality of prescribing practice • Participate in quality improvement activities to develop and improve prescribing practice • Access, evaluate and apply information to improve prescribing practice
Specific Service Standards	Pharmacy Council of New Zealand Standards and Guidelines for Pharmacist Prescribers • Pharmacist Prescriber Ethical Principles • Pharmacist Prescriber Competency Framework
Service Linkages	Collaborative practice as an integrated member of the multidisciplinary team
Setting	**Collaborative Health Team Environment** • In a collaborative health team environment the patient is the focus and beneficiary of the collaboration between members of the patient's healthcare team in sharing patient information. This includes diagnosis, test results, medication history, treatment plans and progress notes etc. and enables the pharmacist to make informed decisions about the patient's treatment and care. • The pharmacist is an established and integral member of a multidisciplinary healthcare team. • The pharmacist plays an active part in the decision making process with respect to initiating or changing a patient's medicine and his/her decisions and recommendations directly affect the individual patient's medicine therapy. • The pharmacist holds mutual concern for the well-being of the patient; is aware of and contributes to the treatment goals set by both the team and the patient, and has the unique skills and knowledge to allow him/her to contribute equally to achieve these. • The pharmacist has direct and up-to-date access to relevant and proportionate information about a patient's medical history and medicines. • The pharmacist communicates prescribing decisions to other healthcare professionals caring for the same patient and updates the patient's relevant medical record in a timely manner.
Activities (Inputs / Outputs)	**Examples of Areas of Practice** • Pharmacist prescriber specialising in a therapeutic area such as renal, paediatrics, aged care, oncology, HIV, mental health, general surgery, respiratory, diabetes, cardiology, stroke; or sub- specialising e.g. heart failure. • Pharmacist prescriber working as a generalist e.g. primary care/ambulatory care (in a GP practice). These pharmacists may prescribe over a broad range of therapeutic areas e.g. polypharmacy, chronic disease management (including repeat prescribing), whilst also addressing specific areas such as gout and diabetes. • Other examples of generalist pharmacists are Emergency Department pharmacist or an aged care facility pharmacist. • Pharmacist prescriber working to reduce medication errors in high-risk areas of the healthcare continuum e.g. medicines reconciliation on admission, surgical pre-admission, discharge from hospital. • Pharmacist prescriber working with a specific class of medicines eg anticoagulation, parenteral nutrition, antimicrobials.

Hospital Clinical Pharmacy Services

There is a significant body of evidence that supports a core set of patient-centred hospital clinical pharmacy services that impact positively on patient outcomes by reducing mortality and drug costs, and must be provided to all inpatients.

	Hospital Clinical Pharmacy Services
Definition	Hospital pharmacy services provide a decentralised (ward based) clinical pharmacy model that includes an evidence-based core set of clinical pharmacy services as minimum services available to a hospital ward or clinical care facility, and delivered by suitably experienced pharmacists. Hospital clinical pharmacy services will blend many of the services described previously, particularly Medicines Use Review, Medicines Optimisation (Medicines Therapy Assessment, Comprehensive Medication Management), Health Education, Medicines Information and Pharmacist Prescribing. The adoption of the core clinical pharmacist services does not automatically exclude other services. It may be that the evidence is not currently available from the study methods utilised to date. For example with inpatient medicine counselling on discharge one would not expect this to impact on the quality of an inpatient episode as measured by Bond et al.[11]
Aims / Objectives	To provide the best possible, evidence-based, patient-centred pharmaceutical care to hospital inpatients. To provide evidence-based pharmacotherapy advice and decision support to prescribers, nurses and other members of the multidisciplinary healthcare team. This core set of clinical pharmacy services is associated with favourable outcomes as measured by: • Mortality rate[2,11,13] • Medicine costs[11,13] • Total cost of care[11] • Length of stay[9,10, 11] • Medication errors[9, 11] • Medication errors that adversely affect patient outcomes[11] • Adverse drug reactions (ADRs)[8, 9, 11] • Decreased rate of readmission (over a twelve month follow-up period)[10]
Training / Accreditation	No formal accreditation. Foundation level skills and information for clinical practice at the time of registration in the pharmacist scope of practice are built upon to develop the specialised skills of a clinical pharmacist. This usually requires a further three or more years of on-the-job training together with formal postgraduate education / qualifications and self-study.
Specific Service Standards	New Zealand Hospital Pharmacists Association (NZHPA) Clinical Guidelines
Setting	Hospital Pharmacy
Reporting / Documentation	Service-related reporting may include, and is not limited to: • Adverse medication reaction reporting • Therapeutic Drug Monitoring reporting • Medication error reporting • Medication incident reporting • Clinical intervention reporting • Medicines use evaluation reporting

	Where appropriate, the pharmacist's contribution to patient care is documented in the patient's medical/clinical record. This enables the establishment of a written record of the pharmacist's actions, concerns, and/or recommendations about the medicines for a specific patient. The medical/clinical record is the definitive documentation of a patient's care and must always be the key reference point.
Service users	Within the health sector clinical pharmacist services are practised at all levels. Services are provided for • patients (e.g. medication history taking, medicine reconciliation, medication optimisation, pharmaceutical care, patient medicines education), • for the healthcare team (e.g. therapeutic drug monitoring, education, medicines information, participation in clinical ward round and multidisciplinary meetings), • for a service unit (e.g. medicines utilisation reports, clinical pathways and medicines protocols), • for a healthcare organisation (e.g. medicines policy documentation, formularies, medicines utilisation research), or • for a professional body (e.g. competency standards, professional undergraduate and continuing education).
Service linkages	Fully integrated as part of clinical services provided by the hospital / ward / care facility.

Service Activities / Outputs

Core Clinical Pharmacy Services:

These are the services where evidence demonstrates a reduction in mortality, morbidity and in drug-related costs.

Medicine reconciliation initiation / medicine histories acquirement[3, 7, 9,10, 11,18, 26, 28]

The pharmacist provides admission histories, including the identification and documentation of ADRs, an accurate history of ADRs and allergies, prescribed medicines, over the counter and complementary medicines. An accurate medicines history is the cornerstone for medicine reconciliation at admission, transfer and discharge. Medicine reconciliation has been mandated by the Health Quality and Safety Commission.[15]

Prescribing in a collaborative setting [11]

In accordance with their scope and area of practice, the pharmacist prescriber working collaboratively with the wider health team, requests laboratory tests if needed and initiates or adjusts drug dosage to obtain the desired therapeutic outcome.

Participation in clinical ward rounds or equivalent[7, 9, 11]

The pharmacist regularly rounds with a medical / surgical team (at least 3 days/week), actively providing provide pharmacotherapeutic advice and support for patients under the team care. Within some disciplines multidisciplinary or case conferences are undertaken.

Inpatient medicines chart (prescription) review[16, 18]

The pharmacist undertakes a screen of inpatient medication charts to provide an entry level safety check. The review includes, but is not limited to, that the prescription is legal; allergy and adverse drug reaction sections are completed and the list of medicines is checked against these entries; medicine name, dose and directions are legible and not open to misinterpretation; the medicine is available and funded; the dose form and route of administration are appropriate; the dose is within the usual therapeutic range for the indication, patient age, renal function and hepatic function; significant medicine-medicine interactions are identified and highlighted to the prescriber; the medicines prescribed have an explicit indication consistent with the patient's problem list.

Medicines Optimisation [17,18]

Medicines optimisation involves the regular and efficient monitoring of the impact of medicines on a patient's health. The pharmacist undertakes a clinical review of all current therapy and actively contributes to the identification of medication-related clinical problems, establishment of therapeutic goals and evaluation of therapeutic options and the individualisation of therapy. The pharmacist has full access to the patient's clinical notes (electronic and/or paper-based). Any recommendations for amendments to the medicines regimen are presentment to the multidisciplinary team. May include development of a medication action plan / care plan.

Therapeutic Drug Monitoring (TDM)

Where appropriate, the clinical pharmacist will recommend therapeutic drug concentration monitoring and will be actively involved in the assessment of and action on drug concentrations.

Patient medicines counselling before discharge[9,16, 18, 19, 20, 23]

The pharmacist undertakes an assessment of individual patient's understanding of their medicines, the indication for the medicine(s), doses, and possible common side effects / things to watch out for. Patients receive an explanation of any changes in medicines, provision of printed medicines information (e.g. medicine information leaflets) and a printed up-to-date list of medicines (e.g. "yellow card").

Medicines and Clinical Information Support including medicines information provision and in-service education[1, 3, 7, 11]
Provided either through a formal medicine information service, specifically assigned Pharmacist(s) and/or by the clinical ward pharmacist. Does not require a physical location called a medicines information centre. Pharmacist presents continuing education to the wider healthcare team (doctors, nurses, pharmacists, etc.) on a scheduled basis at least four times per year.

Medicines guideline and protocol development
Pharmacists as part of a multidisciplinary team draft and develop treatment guidelines, protocols and policies that encapsulate medicines management issues to direct healthcare professionals in best practice use of medicines.

Adverse drug reaction (ADR) monitoring and management[7, 11, 18]
The pharmacist evaluates potential ADR while the patient is hospitalised and appropriately follows through with prescribers. This service is specifically designed to detect and manage ADRs.

Medicines use evaluation (audit of medicines usage) [11, 21]
Pharmacist checks if, at a minimum, medicine-use patterns are analysed and results are reported to a hospital committee, typically the Pharmacy and Therapeutics Committee or equivalent.
Drug use evaluation (DUE) is a system of ongoing, systematic, criteria-based evaluation of drug use that will help ensure that medicines are used appropriately (at the individual patient level). If therapy is deemed to be inappropriate, interventions with providers or patients will be necessary to optimize drug therapy. A DUE is drug- or disease-specific and can be structured so that it will assess the actual process of prescribing, dispensing or administering a drug (indications, dose, drug interactions, etc.).

Medicines use evaluation (MUE) is similar to DUE but emphasizes improving patient outcomes and individual quality of life; it is, therefore, highly dependent on a multidisciplinary approach involving all professionals dealing with drug therapy. An MUE will assess clinical outcomes (cured infections, decreased lipid levels, etc.).

The goal of a DUE or MUE is to promote optimal medication therapy and ensure that drug therapy meets current standards of care. Additional objectives may include: creating guidelines (criteria) for appropriate drug utilization, evaluating the effectiveness of medication therapy, enhancing responsibility/accountability in the medicine use process, controlling medicine cost, preventing medication related problems, for example adverse drug reactions, treatment failures, over-use, under-use, incorrect doses and non-formulary medicine use, identifying areas in which further information and education may be needed by health-care providers.

Antibiotic stewardship programmes (ASP)[24, 25, 26, 27]
Antimicrobial use is an international public health and patient safety issue due to increasing bacterial resistance. Global collective action is required to effectively address the challenge of optimal antimicrobial use. How we use antibiotics today impacts how effective they will be in the future.

Antimicrobial stewardship is defined as 'coordinated interventions designed to improve and measure the appropriate use of antimicrobials by promoting the selection of the optimal antimicrobial regimen including dose, route of administration and duration of therapy'.

ASPs programmes aim, and have been proven to, achieve optimal clinical outcomes while minimising adverse events and limiting the selective pressure on bacterial populations that drive the emergence of antimicrobial resistant strains. Implementation of such programmes help ensure patients receive the right antibiotic, at the right dose, by the right route, at the right time and for the right duration. Cost savings result from shorter hospital stays and reduced use of antimicrobials.

ASPs typically include the implementation of antibiotic usage guidelines, the monitoring of compliance against the guidelines, and step down therapy (intravenous to oral switch in antimicrobial as soon as clinically appropriate). Pharmacist participation in ASPs have demonstrated increased rates of appropriate antibiotic usage, reduced antibacterial resistance and decreased antibiotic costs.

Clinical Research[3, 11]
Performed by Pharmacist either as a principal investigator or co-investigator. The pharmacist is likely to be (co-)author on a published paper. This does not include activity that is limited to investigational drug distribution or record keeping.

Minimum Clinical Pharmacist Staffing

In New Zealand there is a wide variation in workforce and service delivery within and across hospital groups, with the differences not necessarily relating to hospital size or type.[22] Clinical pharmacist staffing levels (number of clinical pharmacists per 100 occupied beds) correlate negatively with patient in hospital mortality. That is, there is a significant decrease in patient mortality with increasing numbers of clinical pharmacists and clinical pharmacist activities.[1, 2, 5, 10, 11, 13] Bond et al have reported lower medication error rates and reduced hospital medicine cost as clinical pharmacist staff levels increase.[4, 6]

One clinical pharmacist working a five-day week, eight-hour day, can provide clinical pharmacy services to 30 inpatients at most when the patients are at the lower end of the scale of need, and only 10-15 inpatients in critical care or specialty units where there is a heavy reliance on medicines with patients requiring a more intensive clinical pharmacy service.[14]

The Society of Hospital Pharmacists of Australia recommend the following minimum staffing required to deliver clinical pharmacy services¥ during normal business hours based on bed type, 'overnight beds' (Table 1) and the number of patients per day (Table 2).[14]

Table 1. Pharmacist staffing levels for provision of clinical pharmacy services based on 'overnight beds'[14]

Category	Service related group / bed type	Beds to 1 FTE pharmacist for clinical pharmacy services 5 days/week
Specialist units, high dependence on medicines	Haematology, Immunology and Infections, Medical Oncology, Renal Medicine, Transplantation, Qualified Neonates	15
Medical bed type	General medical units, Cardiology, Interventional cardiology, Dermatology, Endocrinology, Gastroenterology, Chemotherapy, Neurology, Psychiatric, Respiratory medicine, Rheumatology, Pain management, Definitive Paediatric medicine	20
Surgical bed type	General surgical units, Breast surgery, Cardiothoracic surgery, Colorectal surgery, Upper GIT surgery, Head and Neck surgery, Neurosurgery, Orthopaedics, Plastic and Reconstructive surgery, Urology, Vascular surgery	25
Palliative care	Palliative care	25
Minimal change to medicines anticipated	Ear Nose and Throat, Gynaecology, Obstetrics, Unqualified Neonates, Perinatology	30
Longer stay admissions	Drug and Alcohol, Non Acute Geriatric, Geriatric Evaluation and Management, Palliative care, Rehabilitation	30

Table 1 covers normal business hours, Monday to Friday. Service on a weekend (assuming few admissions and discharges and medication chart review only) would require an additional 2 to 2.5 hours per day.

FTE = Full-time equivalent

GIT = Gastrointestinal Tract

Tables 1 and 2 tables provide minimum clinical pharmacist staffing levels to deliver the evidence-based clinical pharmacy services based on:

- 95% bed occupancy
- An average length of stay of 5.9 days (for general medical and surgical patients [the length of stay for overnight admissions in Australia's public hospitals in 2011–12])
- An average length of stay of 11.9 days for palliative care patients, 18 days for rehabilitation patients and 20 days for geriatric evaluation and management (average Australian values)
- A 5-day service with an 8-hour working day

- A small component of clinical supervision, e.g. undergraduate on hospital pharmacy clinical placement, postgraduate pharmacy students and Intern Pharmacists
- An allowance has been made for attending ward / clinical unit rounds, multidisciplinary team (MDT) meetings, pharmacy staff meetings, and liaison with other pharmacy staff (e.g. clarification of prescriptions)

The total number of inpatients has been determined by

- The number of beds, length of stay and occupancy rate over a given time period. The number of beds rather than the number of patients has been used as a workload measure for these patient categories as the unit 'one bed' is easily understood and identifiable.

Additional resource is required for centralised operational functions (e.g. medicines procurement, dispensary, extemporaneous compounding [aseptic and non-aseptic], medicines distribution, outpatient services and hospital-at-home patient services), adequate technical support staff, education & training, and pharmacy management.

Additional provision must also be made for staff 'back-fill' to cover staff leave (e.g. annual, sickness or study leave). Clinical pharmacist services should also be provided outside of normal business hours seven days a week (including traditional out of hours week days, weekends and public holidays) and additional resource must be made to accommodate this service delivery. Without this additional resource core clinical pharmacist services will not be available to all inpatients.

Table 2. Pharmacist staffing levels for provision of clinical pharmacy services based on the number of patients per day[14]

Category	Service related group / bed type	Beds to 1 FTE pharmacist for clinical pharmacy services 5 days/week
Critical care units, high dependence on medicines	All critical care units, extensive burns, tracheostomy, extra corporeal membrane oxygenation	10
Review and advice on medicine usage – with urgency	Emergency,† Medical Assessment and Planning Units, Short stay acute medical assessment units <48 hours	10
Review and advice on medicine usage – ambulatory	Pharmacists providing review and advice on medicine usage services in Allied Health and/or Clinical Nurse Specialist Interventions clinics	5
Review and advice on medicine usage – outreach services	Pharmacists providing review and advice on medicine usage services in Allied Health and/or Clinical Nurse Specialist Interventions clinics	3
Same day admission	Day surgery beds, Diagnostic GI, Endoscopy, Ophthalmology, Dentistry, Oncology, Renal Dialysis, Hospital in the Home	22
Outpatient clinics	Pharmacists participating in Medical Consultation clinics, Pharmacists providing services in Allied Health and/or Clinical Nurse Specialist Interventions clinics	22

Table 2 includes services on weekdays and weekends.

FTE = Full-time equivalent

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Glossary

Most definitions listed have been derived from those provided in the World Health Organisation and International Pharmaceutical Federation joint publication "Developing Pharmacy Practice. A Focus on Patient Care. Handbook – 2006 Edition".
See www.who.int/medicines/publications/WHO_PSM_PAR_2006.5.pdf

Adherence	The extent to which a person's behaviour - taking medication, following a diet, and/or executing lifestyle changes, corresponds with agreed recommendations from a health care provider (WHO definition).
Care Plan / Medication Management Plan	A detailed schedule outlining the pharmacist's and the patient's activities and responsibilities, completed by the pharmacist, with the input and participation of the patient, designed to: ▪ resolve any medicines therapy problems ▪ successfully achieve the therapeutic goals of the patient and prescriber; and • prevent any potential medicines therapy problems
Community Pharmacist	A pharmacist working in a licensed community pharmacy providing services under the terms of a Services Agreement for the provision of pharmacy services (or similar) with their DHB or other such funding organisation.
Compliance	The extent to which a patient takes or uses a medicine as intended by the prescriber.
Counselling	The provision of supportive advice, guidance, direction or warning. Dispensing Interpretation and evaluation of a prescription, selection and manipulation or compounding of a pharmaceutical product, labelling and supply of the product in an appropriate container according to legal and regulatory requirements, and the provision of information and instructions by a pharmacist, or under the supervision of a pharmacist, to ensure the safe and effective use by the patient.
Evidence-Based	The conscientious, explicit and judicious application of current best evidence into practice.
Health Education	The provision of information enabling individual patients to increase control over, and to improve, their health.
Health Outcome	A consequence (result) of interventions made or not made to meet therapeutic goals. Outcomes can have economic, social/behavioural or physiological characteristics.
Medicine	Has the same meaning as that defined in the Medicines Act 1981, but also includes complementary, traditional, cultural and other forms of chemical therapies.
Medicines Profile	The list of current and recently discontinued medicines pertaining to a given patient, including those prescribed, bought or provided to them from any source.
Medicines Reconciliation	The process to collect, compare, and communicate the most accurate list of medicines that a patient is taking, together with details of any allergies and/or adverse drug reactions (ADRs) with the goal of providing correct medicines for a given time period at all transition points.
Medicines (Prescription) Synchronisation	A process where the pharmacy reviews the medication list from all prescribers and calculates quantities and periods of supply, then plans next orders for prescriptions with an aim to minimise duplicate prescribing. This assists the patient in aligning resupply of medications rather than an ad-hoc basis where some medicines "run out" before others.
Medicines Therapy Problem	An undesirable event a patient experience that involves or is suspected to involve medicine therapy, and that actually or potentially interferes with a desired patient health outcome.
Morbidity	Rate of illness but not death.
Mortality	Rate of death.
Pharmaceutical Care	The responsible provision of medicines therapy for the purpose of achieving definite outcomes that improve a patient's quality of life. It is a collaborative process that aims to prevent or identify and solve medicinal product and health-related problems. This is a continuous quality improvement process for the use of medicinal products.
Pharmacist	A person professionally qualified and registered to practise in pharmacy, the branch of health sciences dealing with the preparation, dispensing and use of medicines. The role of the pharmacist has evolved from that of a provider of medicines to that of a provider of patient-centred pharmaceutical care.
Pharmacotherapy	Treatment of health conditions with medicines.
Practitioner	A person who is professionally qualified and registered to practise the delivery of health care services.
Private Area	An area that is clearly designated and distinct from the general area of the pharmacy that allows the pharmacist and the customer to talk at normal volumes without being overheard by other staff or customers.
Quality Assurance (QA)	Technical, operational and managerial activities aimed at ensuring that all services reaching the patient are safe, effective and acceptable.
Referral	The process of formally (i.e. in writing) directing or redirecting a patient to appropriate services for assessment or treatment. The referral process includes the provision of a summary report of relevant patient information. (See also "Self-referral").
Self-Care [11]	Self-care includes healthy living behaviours such as avoiding health risks, adequate physical exercise, proper nutrition, maintenance of mental well-being, and taking medicines (prescription and over-the- counter) responsibly and appropriately. Self-care products are useful for individuals wishing to take preventive care and to treat a large number of ailments either under the direct supervision of a healthcare professional or on their own. Responsible use of self-care products involves using the right product for the right indication at the right time and in the right

	way. This includes both self- medication using self-care products for treating common health problems and the use of self-care products to help reduce the risk of disease. Self-medication is a widely practised component of self-care. The challenge and opportunity for government authorities, healthcare professionals and providers of self-medication products is to have an appropriate framework in place for responsible self-medication.
Self-Referral	The process by which a patient identifies themselves as a potential Service User.
Service User	The person or their care-giver who is eligible and has consented to using the service provided. High Risk Service Users are those patients who are likely to experience a serious adverse medicines related health outcome in the near future.