australian pharmacy council

Accreditation standards for pharmacist prescriber education programs

Environmental scan and literature review

February 2023

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Acknowledgement of Country

We gratefully acknowledge the Ngunnawal people, the traditional owners of the land on which the APC is based. We pay our respects to the Ngunnawal people and recognise their deep connection to this incredible place we now share. We also pay our respects to the resilience, strength, and wisdom of Aboriginal and Torres Strait Islander Elders, past, present, and emerging across the nation.

We recognise First Nations people's vast knowledge in native plants and their uses. Indigenous Australians were our first pharmacists. Country has provided medicines and healing throughout history. We acknowledge this important connection to Country and the impacts colonisation continues to have on this integral practice.

Canberra means meeting place in Ngunnawal, and is a place where people have been meeting, living and learning for thousands of years. We hope to continue this tradition as we work toward our vision of collaborative, committed and safe pharmacy practice.

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Key Messages

This review explored the factors considered important to the development of accreditation standards for pharmacist prescriber education in Australia, including the following:

- Australian studies that investigated pharmacist prescribing,
- The accreditation standards applicable to pharmacist prescriber programs outside of Australia, and
- The accreditation standards applicable to education programs for Australian professions that prescribe medicines.

Australian evidence is summarised in addition to international literature considered important to standards development. Analysis of the Australian evidence suggests that pharmacists are skilled at undertaking the 'process' aspects of prescribing, including adhering to prescribing protocols and/or guidelines and preparing an accurate prescription. International evidence suggests that pharmacists make safe and clinically accurate prescribing decisions when prescribing independently; however, evidence for independent prescribing in the Australian context is limited, partly due to legislative barriers.

Studies indicate that most pharmacists prefer a supported, rather than independent, model of prescribing and perceive a need for additional education and training in some aspects of practice prior to undertaking a prescribing role.

Accreditation standards for pharmacist prescriber programs in the United Kingdom and New Zealand include similar domains to those pertaining to entry-level programs. Pharmacist prescribing programs in these countries have strict entry requirements and require completion of a period of supervised practical training in addition to structured learning.

Accreditation standards for Australian health professions that prescribe medicines vary greatly in the content relevant to prescribing. Professions who have recently begun to prescribe are more likely to include greater detail specifically relevant to prescribing practice.

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List of Abbreviations

Abbreviation	Meaning
ADC	Australian Dental Council
AMC	Australian Medical Council
ANMAC	Australian Nursing and Midwifery Accreditation Council
APA	Additional Prescribing Authorisation
APC	Australian Pharmacy Council
CPA	Collaborative practice agreement
CPD	Continuing Professional Development
DBA	Dental Board of Australia
DMP	Designated medical practitioner
DPP	Designated prescribing practitioner
ED	Emergency department
ESM	Endorsement for Scheduled Medicines
EPA	Extended Practice Authority
GP	General Practitioner, General Practice
GPhC	General Pharmaceutical Council (UK)
GPP	General Practice Pharmacist
MAS	Minor ailment service
MBS	Medical Benefits Schedule
NMBA	Nursing and Midwifery Board of Australia
NNT	Number needed to treat
NP	Nurse practitioner
NPS	National Prescribing Service (also referred to as NPS MedicineWise)
OBA	Optometry Board of Australia
OCANZ	Optometry Council of Australia and New Zealand
PBS	Pharmaceutical Benefits Scheme
PCNZ	Pharmacy Council of New Zealand
PharmBA	Pharmacy Board of Australia
PodBA	Podiatry Board of Australia
PPMC	Partnered pharmacist medication charting
PSA	Pharmaceutical Society of Australia
QUM	Quality use of medicines
UTI	Urinary tract infection
UITPP-Q	Urinary Tract Infection Pharmacy Pilot-Queensland
VTE	Venous thromboembolism

Glossary

For the purposes of this document, the following definitions apply.

Term	Meaning
Consumer	A person who has used, currently uses, or will use health care services. This includes the person's family and carers.
Minor ailment service	Pharmacist diagnosis and management of common, self-limiting, or uncomplicated conditions.
Independent prescribing	Prescribing undertaken by a professional who assumes responsibility for all parts of the prescribing process according to their scope of practice.
Patient	The term 'consumer' has been used preferentially throughout the document. The term 'patient' is used when the source information (e.g., research study, standard) has employed this term.
Prescribing (refer further definitions, page 10)	An iterative process involving the steps of information gathering, clinical decision making, communication and evaluation which results in the initiation, continuation or cessation of a medicine.[1, 2]
Prescribing Competencies Framework (The Framework)	A national prescribing competencies framework which describes prescribing expectations for prescribers in Australia, regardless of profession.
Scope of practice	A time sensitive, dynamic aspect of practice which indicates those professional activities that a pharmacist is educated, competent and authorised to perform and for which they are accountable.[3]
Supported prescribing	Prescribing undertaken with support provided by a defined formulary, medicines use protocol and/or a collaborative agreement describing shared responsibility.

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Introduction

Australian pharmacists undertake a variety of roles across a range of settings, with a common focus on ensuring and promoting quality medicines use. Pharmacists are equipped with a deep knowledge of medicines allowing them to make a significant contribution to consumer care wherever medicines are used. In recent years, pharmacists have explored an expanded role in prescribing medicines beyond those available without a prescription. Despite considerable research indicating support for an expanded prescribing role, and the development of strategic goals that emphasise such a role,[4] the profession has yet to implement a nationally agreed process to achieve prescribing recognition.

Review aims and focus

This review summarises literature relevant to the development of accreditation standards for education and training programs for pharmacist prescribers in Australia. The review was conducted in three parts:

Part A consists of a literature review focused on pharmacist prescribing in the Australian context. This review summarises the evidence provided by studies investigating pharmacist prescribing as well as the views of key stakeholders.

Part B comprises an environmental scan of international accreditation standards applicable to education programs that qualify pharmacists to prescribe medicines (according to relevant jurisdictional regulation, legislation and professional practice requirements).

Part C summarises the accreditation standards applicable to Australian prescribing professions.

Part A: Review of the literature relevant to pharmacist prescribing in Australia

Aim

This section provides a targeted review of the available evidence relevant to pharmacist prescribing in Australia. The review is not intended to be exhaustive, rather to summarise studies either conducted in Australia or viewed as pivotal to our understanding of the evidence surrounding pharmacist prescribing. Previous work commissioned by the Pharmacy Board of Australia has included a more comprehensive summary of the literature.

Method

Studies were identified by a search of multiple databases including PubMed, CINAHL and Scopus. Search terms used are provided in the Table 1 below. Filters were applied to all searches to identify articles available in English and for which the full text could be obtained. Grey literature was identified by a Google search of relevant organisation websites. Manual searching was conducted after the initial search to identify further relevant studies using reference lists and Google Scholar.

Table 1 Search terms used to identify literature

Database	Search Terms & Combinations
PubMed	Pharmacist, prescrib*, Australia
	'minor ailment'
	Pharmacist AND prescrib* AND Australia
	Pharmacist AND 'minor ailment'
	Pharmacist AND prescrib* AND safety
	Pharmacist AND prescrib* AND outcome
	Pharmacist AND prescrib* AND effective*
CINAHL	Pharmacist, prescrib*, Australia
	'minor ailment'
	Pharmacist AND prescrib* AND Australia
	Pharmacist AND 'minor ailment'
	Pharmacist AND prescrib* AND safety
	'Pharmacist prescribing' AND safety
	'Pharmacist prescribing' AND effectiv*
Scopus	Pharmacist, prescrib*, Australia
	'minor ailment'
	Pharmacist AND prescrib* AND Australia
	Pharmacist AND 'minor ailment'
Google Scholar	Pharmacist prescribing
	Safety of pharmacist prescribing
	Effectiveness of pharmacist prescribing

Background

The medicines management pathway broadly comprises the steps of prescribing, dispensing and administering a medicine.[5] Each step can be further described as a series of context dependent tasks.

Prescribing is a complex intervention that requires careful acknowledgement of possible benefits and risks. Good prescribing practice includes adherence to accepted prescribing principles and recognition of professional practice boundaries.[6] Prescribing can be broadly described as a combination of clinical decision-making and process (prescription preparation) functions. Errors can be associated with either function.[7] For example, errors in decision making may include the failure to obtain relevant patient-specific information or the choice of an incorrect medicine; errors associated with the process of prescribing may include incorrect documentation of a medicine.[7, 8] Prescribing errors can result in adverse drug events (ADE) and patient harm, and are frequently preventable.[9]

Clinical decision-making may be supported by protocols and/or guidelines, while prescribing software may support accurate prescription generation. However, errors remain possible, and prescribers must ensure their competence in all aspects of the prescribing process.

Prescribing in Australia

The Australian definition of prescribing (Box 1) describes the prescribing process as consisting of four stages.[1, 2] The competencies required to prescribe medicines are provided in the Prescribing Competencies Framework.[1] Together, these documents provide the foundation for safe and effective prescribing in Australia, applicable to all prescribing professions. In summary, prescribing consists of the following steps:

- Understanding the needs of the consumer, achieved by gathering relevant pieces of specific information which, when viewed together, provide a picture of the consumer's clinical needs.
- Determining the most appropriate treatment to address the consumer's clinical needs in line with the goals they have expressed. This stage includes both shared decision making (to establish consumer-centred goals) and clinical reasoning (to consider the ideal treatment strategy).
- Communicating the treatment decision. This stage includes the generation of an accurate and legal prescription, the discussion of that decision with the consumer, carer and family members as appropriate, and the communication of the prescribing decision with other health professionals to ensure continuity of care.
- Monitoring the outcomes of prescribed treatment according to the goals of therapy using, treatment specific indicators and an overall clinical view.

Box 1: Definition of prescribing in Australia

Prescribing is an iterative process involving the steps of information gathering, clinical decision making, communication and evaluation which results in the initiation, continuation or cessation of a medicine. [1, 2]

In practice, prescribing commonly occurs as a much more fluid process, rather than four discrete steps. However, each step contributes to the outcome of safe and effective prescribing and should be undertaken within the prescribing context and the prescriber's scope of practice.[1] Prescribers must be accountable for their decision-making at each stage of the prescribing process – either independently or within the context of a shared responsibility arrangement.

Implementation of prescribing

In 2013, Health Workforce Australia published the Health Professionals Prescribing Pathway.[2] The aim of this document was to provide a framework to support a nationally consistent approach to the introduction of non-medical prescribing in Australia. The pathway outlined five steps to ensure health professionals could prescribe safety and competently, and described the following categories of prescribing for the Australian context:

Autonomous prescribing

The prescriber prescribes within their scope of practice without the approval or supervision of another health professional.

Prescribing under supervision

The prescriber prescribes within their scope of practice under the supervision of another authorised health professional.

Prescribing via a structured prescribing arrangement

The prescriber has limited authorisation to prescribe and prescribes under a guideline, protocol or standing order.

Prescribing and scope of practice

Health professionals must practise within the boundaries of their recognised scope of practice. For pharmacists this is defined as *'a time sensitive, dynamic aspect of practice which indicates those professional activities that a pharmacist is educated, competent and authorised to perform and for which they are accountable*.'[3] The key elements of practice scope therefore include:

- competence - informed in part by relevant education and training,
- authority - provided by applicable legislation and regulation (both state and federal) and local policies and procedures, and
- accountability – as defined in professional practice expectations including competency statements, codes of practice, codes of ethics.

Prescribing, as for all other professional practice activities must be undertaken with due recognition of all aspects of practice scope. In practical terms, there may be a difference

between the recognised professional scope of practice, (i.e., the roles a profession has traditionally undertaken), and personal scope of practice (i.e., the roles and/or tasks for which the individual is competent, authorised and accountable). As indicated by the above definition, professional and personal scope evolves over time and this must be recognised and respected.

Prescribing professions in Australia

Australia's prescribing workforce comprises multiple health professions including dentists, doctors, nurse practitioners, endorsed optometrists, endorsed midwives and endorsed podiatrists. State and territory legislation permits registered nurses in approved circumstances to supply medicines. Paramedic practice includes possession, administration and/or supply (but not prescribing) of medicines according to state/territory legislation. For the purposes of this review, registered nurses and paramedics will not be included.

Prescribing may be undertaken as an independent process or supported by defined formularies and/or protocols. Prescriptions prepared by some professions are eligible for government subsidy under the Pharmaceutical Benefits Scheme, while others require the consumer to contribute full payment.

In the context of medicines that require a legal prescription, pharmacists have traditionally contributed to aspects of the prescribing process, largely by providing recommendations and medicines-specific information to inform prescribing decisions. However, the final responsibility for the prescription has commonly rested with another prescribing health professional.

Australian pharmacists are authorised to provide medicines that are available without a prescription. In this context, pharmacists are required to understand the consumer need, formulate a diagnosis for a limited number of conditions and decide on the most appropriate medicine/s.

In tertiary care facilities, pharmacists contribute to the prescribing process by undertaking detailed consumer histories, with a focus on medicines use, and reconciling this information with the clinical history. In addition, pharmacists contribute to the prescribing decision and to the monitoring of therapy by providing medicines-specific expertise at each stage, including advice regarding dose adjustments in response to clinical or biochemical outcomes.

However, Australian pharmacists lag behind many other countries in their ability to contribute to the prescribing workforce by undertaking a formal prescribing role that includes medicines for which a prescription is required.

International view of pharmacist prescribing

Implementation

Internationally, the implementation of pharmacist prescribing includes supported and independent models. Supported models define the parameters of prescribing, which may

include the medicines, consumers (or groups), health conditions for which prescribing may occur. This model may also define, in an agreement, the health professional/s included in the prescribing process and the nature of their contribution and responsibility as part of the prescribing agreement.

For example, pharmacists in most states of the USA are legally permitted to prescribe according to a collaborative practice agreement (CPA),[10] defined as follows: Collaborative practice agreements (CPAs) create formal practice relationships between pharmacists and other health care practitioners, whereby the pharmacist assumes responsibility for specific patient care functions that are otherwise beyond their typical "scope of practice," but aligned with their education and training. These patient care services can include initiation and modification of drug therapy. The extent of the services authorized under the collaborative agreement depends on the state's statutory and regulatory provisions for collaborative practice authority, as well as the terms of the specific agreement between the pharmacist and other health care practitioners.[11]

State legislation defines the boundaries of these agreements, including the required qualifications of the pharmacist, the setting in which a CPA may operate, the limits of the prescribing process e.g., whether the pharmacist is permitted to initiate medicines or undertake a physical examination. In addition to these legal parameters, each CPA defines further aspects of the prescribing agreement. Typically, this will include details such as the names of those involved in the agreement, specific consumers (or consumer groups) for whom the pharmacist may prescribe, the decisions the pharmacist is permitted to make, required pharmacist competence, length of treatment and timeframes for review of therapy, and quality assurance processes for the agreement. Prescribing under this model is called collaborative prescribing in the USA and is somewhat comparable to the Australian 'prescribing under supervision' category.

Outside the boundaries of a CPA, pharmacists may also prescribe according to state agreed protocols (e.g., those relating to smoking cessation, hormonal contraceptives) and may be permitted in some states to prescribe specified classes of medicines autonomously e.g., travel medicines, naloxone.[10] Although this prescribing model is similar to ' prescribing via a structured prescribing arrangement', it is actually called autonomous prescribing in the USA.

Independent prescribing occurs in the UK and Alberta, Canada. As the name suggests, pharmacist independent prescribers are permitted to undertake all aspects of the prescribing process without the support of a formal arrangement. This does not, however, preclude the importance of collaboration as part of the prescribing process. This prescribing model is equivalent to 'autonomous prescribing' in Australia. Pharmacists practising in the UK can also prescribe according to a supported prescribing arrangement (also known as supplementary prescribing), which is similar to prescribing under supervision.

One of the significant differences between supported and independent prescribing models is the level of responsibility the pharmacist assumes, with independent prescribers being responsible for all aspects of the prescribing process while supported prescribers remain responsible for part, but not all of the process.

Safety and effectiveness

Poor prescribing can lead to patient harm. Prescriber competence is critical to ensure patient safety. Studies investigating the prescribing practice of doctors working in acute care facilities indicate an error rate of between 7% and 15% per prescription item.[12-15] The EQUIP study conducted in the UK for the General Medical Council (2009) primarily investigated prescribing errors made by junior doctors in the hospital setting and identified a mean error rate of 8.9% of all medication orders. An expert panel judged the majority of errors (53%) as potentially significant. Errors were commonly, although not exclusively, attributed to junior medical staff.[12] This study reviewed prescribing by all prescribers on specified audit days (including doctors of a range of experience levels), pharmacists and nurses. The study did not identify any errors attributed to pharmacists, although the sample size of pharmacist prescriptions was small.

Limited evidence describing the safety and effectiveness of pharmacist prescribing is available. This section provides a brief summary of the international evidence exploring the safety and outcomes of pharmacist prescribing, before a more detailed review of Australian studies.

Studies exploring pharmacist prescribing have commonly focused on the initial stages of the prescribing process, including the information gathering, clinical decision-making and communication (prescription generation) rather than the monitoring of prescribed therapy. Frequently, studies have explored pharmacist accuracy in the process aspects of prescribing (accuracy of prescription generation) and adherence to prescribing protocols.

Early evidence of the safety and quality of pharmacist prescribing was provided by studies conducted in the UK. These studies often include a range of non-medical prescribers rather than a single profession. A report compiled by Latter et al. (2010) suggested that pharmacist and nurse independent prescribers were making safe and clinically appropriate prescribing decisions indicating that education programs preparing prescribers were fit for purpose.[16] This report, however, included only one study focused on pharmacist prescribing under a supplementary model, suggesting further evidence is needed.[17] Baquir et al. studied pharmacist prescriptions prepared for inpatients admitted to three hospitals.[18] This study identified that pharmacists independently prescribed approximately 13% of the total medication orders written, across a wide range of clinical areas with an error rate of 0.3%.[18] An interesting finding of this study is that 7.5% of prescriptions written by a pharmacist were written because the medicine had been previously incorrectly prescribed and 1.3% were rewritten by the pharmacist to improve clarity.

Systematic reviews

A systematic review conducted in 2016 compared the outcome of prescribing by non-medical and medical practitioners.[19] Clinical outcomes were reviewed for studies conducted in primary and secondary care settings, including one Australian study. Studies (n=46) included those which described a high level of prescriber independence, excluding those that required medical practitioner review, consultation, approval or countersignature. All studies described prescribing by either pharmacists or nurses and the majority were conducted in primary care. The review concluded that non-medical prescribers working with a high level of autonomy and educated according to a range of educational interventions

(undergraduate, postgraduate, on-the-job training) deliver comparable outcomes to medical practitioners in the management of chronic diseases as evidenced by surrogate clinical markers.[19] Of the 18 studies in which adverse events were reported, nine showed little or no difference when comparing non-medical prescribing with usual care. Two studies demonstrated a probable increase in adverse events in the usual care group. The review was unable to determine the impact of the intervention in the remaining studies due to limited reporting.[19]

Poh et al. (2018) reviewed the evidence for the safety and effectiveness of pharmacists prescribing in the hospital setting.[20] Studies (n=15) using a controlled experimental design comparing pharmacist to medical prescribing in a hospital setting and reporting the effects of pharmacist prescribing on patient outcomes were reviewed. All of the included studies described either dependent (e.g., protocol, formulary or agreement-driven) or collaborative prescribing models. Four Australian studies were included. The review concluded that pharmacist prescribing was not inferior to that of a doctor in the management of blood pressure, diabetes and cholesterol, the prescribing of warfarin and heparin according to dosing nomograms or in the charting of usual medicines on admission. Pharmacists demonstrated superior accuracy in the prescribing of usual medicines and in adherence to dosing nomograms.

Noblet et al. (2018) conducted a systematic review of randomised controlled trials investigating the clinical and cost-effectiveness of non-medical prescribers.[21] This review identified only three studies, all of which investigated pharmacist prescribing, two of which were Australian. The authors concluded that although prescribing appears safe and effective, further studies are required.

Pharmacist prescribing in residential aged care

The contribution of Australian pharmacists to the aged care sector has recently been discussed.[22, 23] International evidence can inform the consideration of a prescribing role for pharmacists in this setting. In the UK, Birt et al (2021) studied pharmacist independent prescribers taking responsibility for prescribing and medicines management (including education of staff) in aged care facilities across Scotland, Northern Ireland and England.[24] An independent review of pharmacist activity (including prescribing) was conducted by a geriatrician who identified no safety concerns overall and either explicitly agreed with the pharmacist's pharmaceutical care plan or made no comment for more than 80% of reviewed cases. Pharmacist prescribers contributed to a reduction in potential falls risk for residents by modifying medicines (reducing doses, ceasing) and in the majority of cases general practitioners were highly supportive of these changes. The study noted that the greatest benefit of the pharmacist prescriber role was seen where the pharmacist had worked with the general practitioners associated with the aged care facility prior to the study, with trust identified as an important contributor to success.[24]

Pharmacist prescribing in primary care

A Canadian study of blood pressure management in the community in which pharmacists independently prescribed antihypertensive medicines, ordered and reviewed laboratory investigations, provided consumer education and monitored therapy, identified a statistically significant reduction in blood pressure in the intervention group.[25] Pharmacists in the

intervention group provided care according to one of two funding models: fee for service (flat rate per visit) or fee for performance (flat rate per visit with additional incentive payments where the consumer achieved their blood pressure goals).[25]

The impact of community pharmacists on reducing cardiovascular risk was demonstrated by Tsuyuki et al. in a randomised controlled trial in which pharmacists identified and managed consumers considered at risk for cardiovascular events.[26] In this Canadian study (the RxEACH study), pharmacist prescribers provided comprehensive care that included a baseline risk assessment according to established national guidelines, ordering and review of laboratory investigations, prescribing of required medicines to meet lipid, blood pressure and glycaemic control targets, provided management strategies to achieve smoking cessation, and regular monitoring. The study demonstrated a statistically significant reduction in cardiovascular risk for the intervention group as evidenced by a greater proportion of consumers reaching recommended targets for cholesterol, blood pressure, glycaemic control and smoking cessation.[26] In this study, pharmacists with independent prescribing authority completed additional on-line modules relevant to the study protocol. A subgroup analysis of the RxEACH study population investigated the reduction in cardiovascular risk in consumers with diabetes. This study demonstrated a significant reduction in the cardiovascular risk for consumers with diabetes, especially those with uncontrolled risk factors.[27]

Australian studies investigating pharmacist prescribing

Early Australian literature summarised the available international evidence regarding pharmacist prescribing, suggested opportunities for expanded pharmacist prescribing to contribute to health workforce challenges and proposed models for implementing such a service.[28-30] Subsequent research has explored pharmacist prescribing in a range of settings according to a variety of implementation approaches.

Pharmacist prescribing in the hospital setting

Many of the published studies investigating pharmacist prescribing in Australia have been undertaken in a hospital setting, with most featuring prescribing or medication charting that occurred in collaboration with medical officers. A summary of the studies identified, including the intervention activities and level of evidence, is shown in Table 2. To summarise the available evidence in a meaningful way, studies have been coded in the table according to the study intervention, as indicated in Box 2.

Implementation

The predominant intervention used in Australian studies involves the pharmacist taking a medication history on admission to hospital and subsequently charting the consumer's usual medications.[31-44] Studies use various names to describe the intervention, including *collaborative prescribing, supplementary prescribing, pharmacist-assisted charting, and partnered pharmacist medication charting*.

Charting

Two studies investigated charting in the surgical setting.[32, 33] Marotti et al. investigated the involvement of a pharmacist in the pre-operative setting by randomising consumers to either: (a) no pharmacist involvement preoperatively (medical officer records the medication history and prepares the medication chart, n=120); (b) pharmacist takes and records the medication history (n=120); or (c) pharmacist records the medication history and prepares the medication chart according to agreed protocols guiding medicine management prior to surgery (n=120).[32] No new medicines were prescribed by the pharmacist. This study found that pharmacist charting of regular medicines (referred to as 'supplementary prescribing') reduced the potential for postoperative missed medicines but that recording a medication history without subsequent charting did not lead to the same reduction.[32]

Hale et al. considered the impact of a pharmacist preparing inpatient medication charts according to agreed protocols for the continuation/withholding of medicines perioperatively and venous thromboembolism (VTE) prophylaxis (n=400 consumers).[33] The pharmacist generated medication chart was countersigned by the resident medical officer in what was termed a 'collaborative doctor-pharmacist prescribing' model. The study demonstrated that the pharmacist contributed to a significant reduction in unplanned omissions, improved the accuracy of medications charted and was as appropriate as usual care in the prescribing of VTE prophylaxis.[33]

Several of the charting interventions incorporate the pharmacist reviewing the admission medication and collaborating with medical officers, either indirectly or directly, to resolve identified issues and optimise medication.[34-37, 39-44]

Tong et al. studied the impact of 'partnered pharmacist charting' on prescription accuracy in the general medical and short stay units of a large teaching hospital, identifying a significant reduction in prescribing error rate with the partnered approach.[35] The partnered charting model requires the credentialed pharmacist to complete a routine medication history and VTE risk assessment on admission and discuss the medicines plan with the medical officer prior to charting the agreed medicines. A second pharmacist reviews the medication chart within 24 hours.[35] For the 4765 medicines charted by pharmacists during the study, an error rate of 0.15% was identified. The model has been expanded to multiple sites in Victoria including 31,658 medicines charted for 3,036 patients.[40] This expanded service has continued to demonstrate a significantly reduced error rate for medicines charted by pharmacists (3.6% patients with at least 1 medication error recorded) compared to medical officers (66% patients with at least 1 medication error recorded) and has in addition demonstrated a reduction in the length of stay associated with the model.[40] Recently, the partnered charting model has included pharmacist prescribing of new medicines on admission in addition to the usual medicines and VTE prophylaxis and has continued to demonstrate safety with less than 1% of new medicines associated with a prescribing error.[44]

Further small studies conducted in acute care facilities have similarly provided evidence of pharmacist accuracy in taking a treatment history and documenting medicines. Ogilvie et al. used a similar method to Tong to randomise consumers in the emergency department to either usual care (n=48) or a 'collaborative' model (n=46) in which a treatment plan was

developed jointly between the pharmacist and medical officer, including VTE prophylaxis.[42] The pharmacist documented the treatment plan on the medication chart; however a medical officer signature was required prior to medicines administration. The study demonstrated a significant reduction in prescribing errors and an improvement in the completion of key safety aspects of the medication chart. [42] Similarly in an emergency department, Taylor et al. completed a retrospective chart audit of pharmacist charting medicines on admission according to a 'collaborative' or 'supplementary' model[39] that was similar to that used by both Tong et al. and Ogilvie et al. Where medicines were charted by the pharmacist (n=17), the audit identified a 2% chance of error per medication order and a <1% chance of medium-very high risk error per medication order as defined by a review panel. Where the medication chart was completed by the medical staff (n=17) a medication history may or may not have been previously completed by the pharmacist reflective of usual practice. For this group, the panel identified a 16% chance of error and 10% chance of medium-very high error risk per medication order. Overall, 90% of medication orders completed by the pharmacist were classified as error free according to hospital key performance indicator definition, compared to 26% when completed by the medical officer.[39]

Table 2 indicates there is strong evidence to show the benefits of pharmacist medication charting, including reductions in medication errors, omissions, and length of stay, and this has led to the model being adopted as 'usual practice' in some hospitals.[40, 41]

Discharge prescribing

Another frequently described intervention was the preparation of discharge prescriptions by the pharmacist.[45-49] As with admission medication charting, this model also involves some form of collaboration with the treating medical officer.

Finn et al. studied the impact of pharmacists completing discharge prescriptions in a geriatric medical ward according to a 'pharmacist-led collaborative prescribing' model.[49] The primary outcome measure was the number of discharge prescriptions that contained at least one error according to an agreed definition. Identified errors were stratified according to a risk matrix and reviewed independently by a clinical pharmacologist. A significant reduction in medication error incidence was identified in the intervention arm (n=45 consumers) compared to the control arm (n=39 consumers) and a significant reduction in errors associated with high alert medicines in the intervention arm.

Medicines initiation

Relatively few of the identified studies involve the initiation of medicines. Several of the medication charting models included the initiation of VTE prophylaxis in accordance with an identified protocol.[33, 35, 36, 38, 40, 42-44] A recent study by Hua et al. describes the expansion of the Victorian 'pharmacist partnered medication charting' model to include the charting of new medicines following a face-to-face discussion with a medical officer.[44]

The pilot study conducted by Weeks et al. also described a pharmacist initiating or adjusting statin therapy in a pharmacist-led lipid clinic.[50] In this study, the pharmacist used a cardiologist-developed prescribing algorithm to guide statin dose adjustment and monitoring.

Box 2 – Intervention codes used to describe Australian studies

C – Charting Example: The pharmacist reviews the patient at the point of admission and documents the medicines taken prior to admission on the medication chart.

W – Charting of medicines with decision-making regarding medicines that should be withheld Example: the pharmacist reviews the patient prior to surgery, documents the medicines taken prior to admission, decides which should be withheld prior to surgery according to established protocols and documents those to continue on the medication chart.

R – Collaborative Review Example: the pharmacist reviews the patient at the point of admission, identifies medicine-related issues and collaborates with a medical officer to optimise medication (including continuation, cessation, withholding or dose adjustment) before documenting the medicines on the medication chart.

I – Medicines initiation Example: the pharmacist reviews the patient and initiates medicines according to need.

A – Adjustment of medicines dose Example: the pharmacist reviews the patient and makes adjustments to their medicines.

D – Collaborative preparation of discharge prescription Example: the pharmacist reviews the patient at the point of discharge and discusses with the treating medical officer which medicines should be prescribed.

Table 2 Summary of Australian hospital pharmacist prescribing/medication charting studies

First author Year of publication State	Aims/objective	Clinical area or cohort	Intervention and Code	Authority	Number of intervention subjects	Study design	Intervention findings/ outcomes	Level of evidence*
Birdsey 2005 VIC[45]	To determine if pharmacist-initiated discharge prescribing decreases discharge times and improves accuracy.	Cardiology	Pharmacist prepared discharge prescriptions **D**	Printed discharge prescription reviewed and signed by medical officer	35	Prospective cohort design	• Significantly reduced time for medication readiness • Fewer errors of omission • Less deviation from evidence-based practice	Pilot study
Vasileff 2009 SA[31]	To determine the effect on medication errors of pharmacists charting medication	Emergency department	Pharmacist medication history taking and charting **C**	Chart reviewed and signed by medical officer	29	Sequential pre-post intervention	• Significant reduction in: ○ unintended discrepancies ○ missed doses ○ incorrect doses	III-3
Marotti 2011 NSW[32]	Evaluation of the impact of pharmacist medication history taking and supplementary prescribing	Pre-operative	Pharmacist medication history taking and charting **C W**	Unspecified	120	Randomised controlled trial	• Significant reduction in: ○ missed doses ○ incorrect doses/ ○ frequencies	II

First author Year of publication State	Aims/objective	Clinical area or cohort	Intervention and Code	Authority	Number of intervention subjects	Study design	Intervention findings/ outcomes	Level of evidence*
Weeks 2012 VIC[50]	Report patient and pharmacist experiences of a pharmacist-led lipid clinic	Surgical outpatients	Pharmacist review and lipid management I A (statins)	Prescriptions countersigned by cardiologist	8	Randomisation to control and intervention groups	• Sample too small for statistical comparisons. • 5/8 patients achieved low density lipoprotein (LDL) < 2mmol/L	Not Applicable
Hale 2013 QLD[33]	To evaluate inpatient pharmacist prescribing	Surgical pre-admission clinic	Pharmacist medication history taking and charting C W I (VTE prophylaxis)	Authorisation under state legislation	194	Randomised controlled trial	• Significant reduction in: ○ Unintended omissions ○ Drug, dose, frequency prescribing errors • Appropriateness of VTE prophylaxis prescribing comparable to usual care	II
Weeks 2014 VIC[34]	To identify, implement and evaluate extended ED pharmacist roles	Emergency department	Pharmacist medication history taking, charting, therapeutic suggestions (written or by	Suggestions reviewed and chart signed by medical officer	205	Pre-and post-intervention audit	• 78.6% of written suggestions accepted • 95.2% verbal suggestions accepted	III-3

First author Year of publication State	Aims/objective	Clinical area or cohort	Intervention and Code	Authority	Number of intervention subjects	Study design	Intervention findings/ outcomes	Level of evidence*
			verbal consultation) C R					
Tong 2015 VIC[35]	To describe the safety and effectiveness of partnered medication charting	General medical and emergency	Pharmacist medication history taking and charting: Partnered pharmacist medication charting model (PPMC) C R I (VTE prophylaxis)	Chart not countersigned	549	Prospective single arm study	• Error rate of 1.47 per 1000 medications charted	No control, Proof of concept study
Tong 2016 VIC[36]	To evaluate the effectiveness of pharmacist charting to prevent medication errors	General medical and emergency	PPMC C R I	Chart not countersigned	408	Unblinded Randomised controlled trial	• Significant reduction in medication errors • Number needed to treat (NNT) to prevent one error = 1.3	II

First author Year of publication State	Aims/objective	Clinical area or cohort	Intervention and Code	Authority	Number of intervention subjects	Study design	Intervention findings/ outcomes	Level of evidence*
			(VTE prophylaxis)					
Bajorek 2017 NSW[37]	To trial a pharmacist charting service	Pre-admission clinic	Pharmacist medication history taking and charting +/- written recommendations C R	Suggestions reviewed and chart signed by medical officer	72	Pre-post audit	• Significant improvement in completeness and accuracy of charts • Reduced consultation time for doctors	Pilot study
Tran 2017 VIC[46]	To evaluate the effect of pharmacist prepared discharge prescriptions on patient flow targets	Surgical	Pharmacist prepared discharge prescriptions D	Electronic and printed discharge prescription reviewed and signed by medical officer	273	Prospective pre-and post-intervention study	• Significant improvement in ○ time to discharge ○ patients discharged before 9 am • Nil impact on ED access targets	III-3
Tran 2019 VIC[51]	To evaluate the effect of pharmacist prepared discharge prescriptions on	General medical	Pharmacist prepared discharge prescriptions	Electronic and printed discharge prescription	84	Prospective pre-and post-intervention study	• Significant reduction in: ○ prescriptions requiring amendment ○ time to discharge	III-3

First author Year of publication State	Aims/objective	Clinical area or cohort	Intervention and Code	Authority	Number of intervention subjects	Study design	Intervention findings/ outcomes	Level of evidence*
	patient flow and medical satisfaction		D	reviewed and signed by medical officer			• Improved medical staff satisfaction	
Tran 2019 VIC[38]	To evaluate the effect of pharmacist-assisted electronic prescribing on medication errors	Orthopaedic	Pharmacist medication history taking and electronic charting C I (VTE prophylaxis)	Verbal authorisation and co-signing of electronic orders by medical officer	210	Prospective pre- and post-intervention study	• Significant reduction in: ○ Median number of medication errors per patient • Delays in administering VTE prophylaxis	III-3
Taylor 2019 QLD[39]	To audit pharmacist written medication charts for safety and accuracy	Emergency department	Opportunistic pharmacist medication history taking and charting C R	Authorisation under state legislation. Chart reviewed and signed by medical officer	17	Retrospective Audit	• Reduced incidence of errors in pharmacist-prepared medication charts	Audit

First author Year of publication State	Aims/objective	Clinical area or cohort	Intervention and Code	Authority	Number of intervention subjects	Study design	Intervention findings/ outcomes	Level of evidence*
Tong 2020 VIC[40]	Multisite evaluation of the PPMC model	General medical	PPMC C R I (VTE prophylaxis)	Chart not countersigned	3036	Prospective cohort study	• Significant reduction in: ○ length of stay ○ medication errors • NNT to prevent 1 error =1.6	III-3
Nguyen 2020 VIC[48]	To evaluate the impact of pharmacist prescribing on postoperative medication management	Surgical	Pharmacist medication history taking and preparing discharge prescriptions D	Discharge prescription reviewed and signed by medical officer	53	Randomised prospective interventional study	• Significant reduction in: ○ medication history errors ○ discharge prescription errors • Significant increase in the number of discharge summaries with a complete medication list	III-3
Sinclair 2020 WA[41]	To validate the PPMC model in the Western Australian setting	Acute medical	PPMC C R	Chart reviewed and signed by medical officer	91	Prospective cohort study	• Significant reduction in medication errors • NNT to prevent 1 error =1.8	Feasibility Study

First author Year of publication State	Aims/objective	Clinical area or cohort	Intervention and **Code**	Authority	Number of intervention subjects	Study design	Intervention findings/ outcomes	Level of evidence*
Finn 2021 QLD[49]	To evaluate the effect of collaborative pharmacist discharge prescribing on medication errors in handwritten and digital prescriptions	Geriatric medical	Pharmacist prepared discharge prescriptions **D**	Authorisation under state legislation. Prescription countersigned to allow PBS supply	Phase 1 24 Phase 2 21	Randomised controlled trial	• Significant reduction in: ○ medication errors ○ clinically significant errors • No significant change between handwritten and digital prescriptions	II
Ogilvie 2022 QLD[42]	To assess the safety and accuracy of a pharmacist collaborative prescribing model	Emergency department	Pharmacist medication history taking and charting **C R I** (VTE prophylaxis)	Authorisation under state legislation	46	Randomised controlled trial	• Significant reduction in prescribing errors, omissions, and discrepancies • Improved concordance with VTE prophylaxis guidelines	II
Tong 2022 VIC[43]	Evaluation of PPMC in rural and regional health services	General medical	PPMC **C R**	Chart not countersigned	675	Prospective cohort study	• Significant reduction in: ○ medication errors ○ length of stay • NNT to prevent 1 error =1.75	III-3

First author Year of publication State	Aims/objective	Clinical area or cohort	Intervention and Code	Authority	Number of intervention subjects	Study design	Intervention findings/ outcomes	Level of evidence*
Hua 2022 VIC[44]	To assess the safety of the expanded PPMC model	General medical	Expanded PPMC model with C R I (VTE prophylaxis and new medicines)	Medication management plan co-signed by medical officer	744	Prospective observational study	• 0.98% medication charting errors in PPMC model • 10.7% of newly charted medicine amended within 24 hours of charting, mostly due to a change in diagnosis/clinical status, or following investigations	No control

*Evidence defined according to the NHMRC levels of evidence and grades for recommendations for developers of guidelines (2009)

It is worth considering whether charting or discharge prescription preparation activities can be classified as prescribing. Given that the Australian definition of prescribing describes the steps of information gathering, clinical decision-making, communication, and evaluation in relation to medicines,[1, 2] it could be argued that the charting process aligns with this definition. Pharmacists gather consumer-specific information, undertake a clinical decision-making process and communicate that decision. However, most of the studied interventions involve pharmacists discussing ongoing therapy with medical officers and potentially delegating the decision-making process (or part thereof) and the responsibility for that decision.

Restricted legislative authority poses a barrier to prescribing research. Most of the study interventions include the countersigning of medication charts and discharge prescriptions by medical officers to meet legislative requirements. The studies conducted in Queensland required legislative approval to undertake the prescribing intervention.[33, 39, 42, 49] Discharge prescriptions prepared by pharmacists require the signature of a prescriber with PBS prescribing rights to enable consumer access to subsidised medicines, which impacted study design.

The identified studies exploring pharmacist prescribing in Australian hospitals have demonstrated pharmacist competence in the interpretation and application of clinical guidance and/or protocols and superior accuracy of prescription generation when compared to medical staff, with a resultant impact on potential or actual prescription error. Fewer studies have interrogated independent clinical decision-making by pharmacists in the context of prescribing, possibly reflecting the infancy of pharmacist prescribing in this country and prohibitive legislation.

Pharmacist prescribing in the primary care setting

Management of minor ailments

Pharmacists have long held the role of providing readily accessible consumer advice to support the management of self-limiting illness. Formal minor ailment services (MAS), involving community pharmacists diagnosing and managing common, self-limiting, or uncomplicated conditions, have been implemented in the UK and Canada and there is a growing appetite to implement such services in Australia. The expansion of pharmacist prescribing in the community pharmacy setting in Australia (beyond non-prescription medicines) is, however, hampered by the current lack of legislative authority across all states and territories.

Dineen-Griffin et al. reported on the co-design of an Australian MAS in which a service model and six treatment pathways were developed in a research collaboration between the University of Technology Sydney and Western Sydney Primary Health Network.[52] A cluster randomised controlled trial (intervention n=524) indicated the MAS significantly improved the appropriate referral rate, appropriate medicine recommendation, and symptom resolution or relief for patients presenting to community pharmacies (evidence level II).[53] The developed treatment pathways did not, however, extend supply authority to schedule 4 (prescription-only) medicines.

Pharmacist vaccination

Authorised Australian pharmacists administer vaccinations in community and hospital settings. Although not considered prescribing from a legislative perspective, administering a vaccination complies with the Australian definition of prescribing in that it requires information gathering, clinical decision-making, communication and monitoring of the prescribing decision. Similar to the model employed by paramedics and other professions, the prescribing decision is followed immediately by the administration of the chosen medicine - in this case, a vaccine.
The inclusion of vaccination as an accepted component of pharmacist practice has been influenced by evidence gathered over the last decade, combined with associated legislative and health policy amendments. A decade ago, the Grattan Institute suggested pharmacists could reduce rural GP visits if they were permitted to administer vaccinations.[54] The Queensland Pharmacist Immunisation Pilot (QPIP, 2014 – 2016) studied the provision of vaccinations by pharmacists in the community setting and concluded that this role was safe, effective and feasible.[55] Subsequently, all jurisdictions have introduced legislation to permit pharmacist vaccinations, although the vaccine/s that can be administered and to whom differ between states and territories.[56] This lack of national consistency has the potential to cause confusion for the public and other health professions regarding the role of the pharmacist in prescribing and administering vaccinations.[57]

Pharmacists must demonstrate their competence to administer vaccinations. Specific education and training is available via national professional organisations and included in some entry-level pharmacy programs. The Australian Pharmacy Council developed standards for the education of pharmacists to administer vaccines [58] reflective of the National Immunisation Education Framework for Health Professionals.[59] In some jurisdictions, additional specific education and training requirements are in place. National professional practice guidelines have been developed to support pharmacists providing a vaccination service, [60] along with state based guidelines in some jurisdictions.[61]

Pharmacist prescribing for urinary tract Infections in Queensland

In 2018, a state parliamentary inquiry report recommended the Queensland Department of Health develop options to provide low-risk emergency and repeat prescriptions through pharmacies. The recommendation specified such activities should be subject to a risk minimisation framework and any change to a pharmacist's scope of practice should be underpinned by appropriate credentialing and training.[62] As a result of this recommendation, the Urinary Tract Infection Pharmacy Pilot-Queensland (UTIPP-Q) was implemented across the state. Authority was granted under state medicines legislation, initially through a Drug Therapy Protocol[63] and subsequently under the Pharmacist Extended Practice Authority (EPA), which authorised pharmacists to provide trimethoprim, cefalexin, or nitrofurantoin in accordance with the Pharmaceutical Society of Australia (PSA) cystitis treatment guidelines, [64, 65] which included patient eligibility and referral points. Community pharmacists who registered to participate and completed the specified training were permitted to treat uncomplicated urinary tract infections (UTI) in women aged 18-65 years. An outcome report published in 2022 stated that a total of 6,531 women received treatment for uncomplicated UTI during the pilot, which ran from June 2020 to December 2021.[66] The key findings of the report indicated that the service was safe, appropriate,

improved access to treatment, and was acceptable to consumers.[66] In July 2022, the service was made permanent under the authority of a revised Pharmacist EPA.[67, 68]

North Queensland Community Pharmacy Scope of Practice Pilot

In 2020, The Queensland Government made an election commitment to work with the Pharmacy Guild of Australia, the Pharmaceutical Society of Australia, and other stakeholders to design and implement a trial of pharmacists practising to their full scope in North Queensland.[69] The election commitment, which was driven by concerns regarding workforce shortages in the primary care sector, led to the design of the North Queensland Community Pharmacy Scope of Practice Pilot, which is due to commence in late 2023.[69, 70] Queensland Health has published a document that indicates that community pharmacists in North Queensland will be authorised to provide a range of services that fall into three categories:[71]

- Medication management (including extended vaccination authority, medication administration, therapeutic adaptation and substitution, and continued dispensing).
- Autonomous prescribing for specified acute conditions and health and wellbeing in accordance with clinical practice guidelines.
- Protocol/structured prescribing as part of a chronic disease management program.

The conditions which can be managed within the Pilot are shown in Table 3.

Table 3 Proposed prescribing scope for the North Queensland Community Pharmacy Scope of Practice Pilot

Autonomous prescribing	Protocol/structured prescribing
Gastro-oesophageal reflux and gastro-oesophageal reflux disease	Cardiovascular disease reduction program for type 2 diabetes, hypertension and dyslipidaemia
Acute nausea and vomiting	
Allergic and non-allergic rhinitis	Improved Asthma (and Exercise-Induced Bronchospasm) Symptom Program
Impetigo	
Herpes Zoster	Chronic Obstructive Pulmonary Disease (COPD) Monitoring Program
Mild to moderate atopic dermatitis	
Acute exacerbations of mild plaque psoriasis	
Mild to moderate acne	
Acute minor wound management	
Acute and diffuse otitis externa	
Acute otitis media	

Autonomous prescribing	Protocol/structured prescribing
Acute mild musculoskeletal pain and inflammation	
Smoking cessation	
Hormonal contraception	
Oral health screening and fluoride application	
Travel health	
Management of overweight and obesity	

Pharmacist prescribing will occur under a fee-for-service model in which pharmacists charge a consultation fee as well as the cost of any medicines prescribed. Depending on the condition being treated, customers may also have to pay for additional services such as pathology or point of care testing.

The service can only be provided at an approved Pilot site by a pharmacist authorised by Queensland Health. Requirements for authorisation include general registration with the Pharmacy Board of Australia, education and training, appropriate indemnity insurance, and consumer consent. Pharmacists must agree to offer all components of the Pilot to participate. Authority for undertaking activities outside of existing state legislation will be provided through a temporary approval.

Pharmacy reform in New South Wales

In November 2022, the New South Wales Government announced a pharmacy reform to expand pharmacy services to ease pressure on GP wait times and emergency departments.[72]

The Government highlighted three ways in which access to primary care would be improved:

- Increasing pharmacist vaccination authority to include Japanese encephalitis, hepatitis A, hepatitis B, poliomyelitis, typhoid, and herpes zoster.
- A 12-month trial evaluating pharmacist prescribing for UTIs.
- A state-wide pilot of pharmacist prescribing for minor skin ailments, ear infections, and hormonal contraception.

Victorian Government pharmacist prescribing trial

Shortly after the announcement from the NSW Government, the Victorian Government made an election commitment to undertake a similar 12-month trial of an expanded pharmacist role that will include:[73]

- Prescribing repeats for oral contraceptives
- Managing uncomplicated UTIs
- Administering a wider range of public health and travel vaccinations

- Treating minor illnesses such as common skin conditions.

The announcement indicates that pharmacists will receive $20 per consultation, with all fees paid by the Government while patients will be required to pay no more than the current PBS co-payment for any prescribed medicines. In this sense, the trial differs from the North Queensland Pilot where patients will be required to pay all costs. The estimated cost of the election commitment is $19 million.

At the time of writing, further details regarding these initiatives are not yet available.

Continued dispensing

Continued dispensing refers to the provision of medicine/s by a pharmacist to support continuity of care where a prescription cannot be obtained. Initially introduced in 2013 as part of the Fifth Community Pharmacy Agreement, continued dispensing aimed to improve the medicines adherence of a limited number of medicines[74] in specific circumstances according to defined guidelines.[75, 76] Amendments to individual state and territory legislation authorise continued dispensing nationally to complement existing emergency supply arrangements and PBS arrangements apply to the process.[77]

Guidelines for continued dispensing specify the requirements with which a pharmacist must comply include:[75]

- The medicine is eligible for supply under continued dispensing legislation
- There is an immediate need for supply to facilitate continuity of care
- It is not practicable to obtain a prescription from an authorised prescriber
- The medicine has been previously prescribed for the patient
- The patient's therapy is stable
- There has been a prior clinical review by the prescriber to support continuation
- There is an ongoing need for supply and the medicine is safe and appropriate for the patient.

The importance of assessing and understanding the consumer's clinical state, determining an ongoing need for the medicine, monitoring for potential adverse events related to the medicine and communicating the decision to provide the medicine are all components of the process of continued dispensing, aligning this service with prescribing process.

Continued Dispensing Arrangements were temporarily expanded in January 2020 in response to the bushfire crisis and the COVID-19 pandemic. The significantly expanded emergency arrangement allowed for the continued dispensing of nearly all PBS medicines. This emergency arrangement was extended until July 2022, when new Continued Dispensing Arrangements came into force. The list of eligible medicines was permanently expanded from the original oral contraceptive and statin list to additionally include drugs used in the management of chronic diseases such as diabetes, heart disease, lung disease,

and HIV infection.

Pharmacist prescribing in general practice

In Australia, the role of the General Practice Pharmacist (GPP) has been evolving over recent years. Pharmacists who work in general practice are uniquely placed to expand the opportunities for prescribing in primary care. In 2018, Deeks et al. reported a pilot study evaluating the role of a GPP in asthma management in the Australian Capital Territory.[78] An activity diary indicated the pharmacist conducted asthma management activities that included recommendations relating to prescribing. These recommendations included initiation, step up, and step down of inhaled and oral asthma treatment, as well as device changes. A subset of patients seen more than once by the GPP (n=26) demonstrated an improvement in asthma control scores. Although the study was small and the pharmacist limited to making recommendations to the GP, it demonstrates the feasibility of a supervised prescribing model.

Another feasibility pilot evaluating a collaborative GPP-GP model in Queensland has recently been reported by Percival et al.[79] In the model, the GPP conducted a medication review with patients whose clinical measures suggested suboptimal chronic disease control. Following discussions with the GP about any identified medicine-related problems, the pharmacist was given increased responsibility to action the agreed recommendations. The study demonstrated high acceptance and implementation rates; however, implementation of recommendations made by pharmacists was limited by their inability to request tests and prescribe medication under the medical and pharmaceutical benefits schemes. The authors conclude the study confirms the feasibility of GPP-GP collaborative prescribing in Australia.

Although these studies are largely promising, further evidence of the economic benefits of pharmacist prescribing appears warranted.

Studies investigating stakeholder views of prescribing

Australian evidence suggests that pharmacists and consumers hold positive views regarding an expanded prescribing role for pharmacists.[80] However, it should be noted that current legislation largely prevents pharmacists from implementing an expanded prescribing role, making it difficult to conduct studies that evaluate pharmacist and/or consumer experiences of such a role. As a result, most studies provide an indication of perceptions, rather than personal experience of an expanded prescribing service.

Pharmacists and consumers appear supportive of pharmacists prescribing in a collaborative model. This tends to indicate a clear relationship between the pharmacist and doctor[81-83] with some studies identifying consumer and pharmacist preference for other health professionals (commonly medical professionals) to retain the role of primary diagnostician.[84-86] In one study, consumers indicated support for pharmacists to undertake both diagnostic and prescribing roles in the areas of pain management and antibiotic prescribing.[84]

Consumer views

Consumers have expressed trust in pharmacists to undertake a prescribing role,[84] highlighting an awareness of the profession's depth of medicines knowledge[84, 86] and their important role as a consumer advocate.[86] Where Australian consumers have experienced an expanded pharmacist prescribing service, their response has been positive, indicating a high level of satisfaction with the consultation and reiterating their trust for pharmacists as prescribers.[87]

Pharmacist prescribing appears attractive to consumers who indicate they would appreciate the convenience of such a service, particularly in the community setting, where they believe (or had experienced) the model would improve their access to medicines.[82, 84-86, 88]

Pharmacist views

Pharmacists working in both community and hospital settings have indicated their support for an expanded prescribing role.[81-83, 86, 89-93] Hospital pharmacists view prescribing as contributing to their efficiency in providing care and reducing healthcare costs and note that in some areas pharmacists already undertake 'defacto prescribing' e.g., charting medicines for a doctor to countersign.[89, 92] Community pharmacists view an expanded prescribing role as enabling better use of their professional skills and knowledge.[90, 94] Pharmacists accredited to perform home medicines reviews (HMR) indicate that prescribing in the management of hypertension would be useful, particularly for less complex cases and that they felt confident to undertake this role when provided with simulated cases.[95]

Data collected from surveys and focus groups suggest that the majority of pharmacists consider additional training would be required in some areas of practice such as consumer assessment and diagnosis should they undertake a prescribing role.[81, 83, 89] Hoti et al. identified was no difference in the perceived training needs with respect to the prescribing model,[96] while Kamarudin et al. reported that pharmacy stakeholders considered further training was required to implement collaborative prescribing.[97] Studies indicate that most pharmacists would prefer prescribing to be implemented according to a supported model.[81, 83, 92, 93]

Despite viewing an expanded prescribing role positively, pharmacists raise concern that such a role would not be supported, or would create conflict with other healthcare professionals, particularly medical practitioners.[83, 89, 91] This view likely reflects the opposition to pharmacist prescribing raised by sectors of the medical profession who hold the view that prescribing should not be undertaken by other professions due to safety concerns.[98-101]

Difference between views of pharmacists working in different sectors

Hoti et al. identified significant differences between the attitudes of hospital and community pharmacists in relation to some aspects of an expanded prescribing role.[90] Community pharmacists indicated greater support for an expanded prescribing role, compared to their hospital colleagues. They also considered the clinical assessment skills of pharmacists adequate to undertake a prescribing role and were more likely to consider a prescribing role as enabling better use of professional skills. On the other hand, hospital pharmacists were more confident to provide independent prescribing in specific therapeutic areas. While the views expressed (via survey) may reflect the different roles undertaken within each sector and/or the experience of the respondent groups (community pharmacists were more experienced as a group than the hospital respondents) it is important to acknowledge the different views held by sectors within the profession.

Views of other professions

The views of health professional colleagues have been explored in a limited number of Australian studies. Acknowledging the unique challenges of providing healthcare in rural communities, Tan et al. interviewed a range of health professionals to explore alternative models of care.[102] The study highlighted the importance of a team approach to ensure timely access to medicines, noting a role for pharmacists to provide a continued dispensing service.[102] General practitioners were not supportive of pharmacists working in a general practice environment undertaking prescribing or diagnostic roles; however held positive views regarding other activities such as medication reviews, education and audit.[86] Practical issues, such as pharmacist access to required patient information[83, 86] and remuneration for providing a prescribing service[82, 85, 86] have been highlighted as important considerations to be addressed.

International evidence suggests that the majority of doctors who have worked with pharmacist prescribers support the role highlighting a number of benefits including: more holistic and continuous consumer care, better use of pharmacists skills and enhancing physician medicine knowledge.[88]

Education and training to prescribe

Approval to undertake studies exploring the extension of prescribing authority to include prescription only medicines have invariably required completion of additional education and training. The absence of national guidance regarding training requirements for pharmacist prescribing has resulted in individual research teams determining the level of pharmacist training and education required to participate in the study. Training requirements have ranged from brief online modules to the completion of university-delivered prescribing courses.

Pharmacists delivering the Partnered Pharmacist Medication Charting (PPMC) model in Victoria were locally credentialed through a structured program that comprised: [35]

- An online prescribing workshop
- Clinical assessment using the Clinical Competence Assessment Tool (ClinCAT)
- Group tutorials on clinical topics
- Observation of two partnered charting cases
- Supervised charting for five partnered charting cases
- A case-based objective structured clinical examination (OSCEs) with a medical consultant and senior pharmacist.

Tran et al. describe similar credentialing processes for pharmacists using an electronic system to chart admission medicines and prepare discharge prescriptions.[38, 51] Other studies have described training that includes the completion of a UK-accredited non-medical prescribing course,[33, 50] prescribing systems training,[46] interprofessional workshops,[53, 103] and on-site training.[53]

In Queensland, the legislative authority granted for individual prescribing services has been conditional on the participating pharmacists undertaking additional training. The pharmacist in the collaborative prescribing trial described by Hale et al. completed a UK pharmacist prescribing course and undertook a 12-day 'learning in practice' period supervised by a designated medical practitioner (DMP).[33] The supervised training included case studies and sessions on VTE prophylaxis, and the pharmacist was endorsed as competent to prescribe prior to trial commencement. Pharmacists participating in subsequent prescribing trials were required to complete a 'Prescribing and Quality Use of Medicines' module delivered by Queensland University of Technology.[49, 104] This module was the first of its kind to be developed in Australia and included core prescribing skills such as professional, legal, and ethical aspects of prescribing; prescribing and medical error; prescribing collaboratively; information gathering; clinical decision-making; and monitoring.[105] Students were also required to complete 120 learning in practice hours supervised by a DMP.

The authority for pharmacists to provide antibiotics under the UTIPP-Q pilot was contingent on the pharmacist completing a UTI training program.[65] This program was delivered as an online training module which took approximately 2 hours to complete.[66] The revised pharmacist EPA, which provides authority for the continued UTI service, also requires participating pharmacists to complete a study program that must include UTI classification and epidemiology, anatomy, pathogenesis, assessment, differential diagnosis, treatment, and the UTI service.[67]

The North Queensland Pilot, which appears to include the most extensive prescribing scope in Australia to date, will also require authorised pharmacists to undertake additional training. The Queensland Government has indicated this training will be equivalent to a graduate certificate and consist of both prescribing and clinical training which will be delivered by tertiary education providers.[70] Pharmacists are already competent in many of the tasks associated with prescribing given their established role in prescribing non-prescription medicines. The 2019 Pharmacy Board of Australia (PBA) position statement on pharmacist prescribing, stated that it is the Board's view that pharmacists do not need to complete additional formal post-graduate studies to prescribe under a structured prescribing

arrangement or under supervision.[106] The Board suggested that any shortfalls in competence could be addressed by short courses or local credentialing, and this is seemingly the route that many services have taken to this point; however, this means that training provided can vary significantly in both content and standard. Clarification of training requirements and guidance for education providers responsible for preparing pharmacists to prescribe appears crucial.

Evidence indicates that pharmacists themselves desire additional training; two studies highlight several areas in which pharmacists perceive a need for upskilling before undertaking prescribing activities.[96, 97] These areas included pathophysiology, consumer assessment, diagnosis, clinical decision-making, consultations, and monitoring. Hoti et al. found there was no difference in these perceived needs with respect to the prescribing model,[96] while Kamarudin et al. reported that pharmacy stakeholders considered further training was required to implement collaborative prescribing.[97]

All health professionals are required to practice according to jurisdictional legislation, accepted national practice standards and within the boundaries of their personal competence. Given the breadth of pharmacist scope, it would appear impossible to define for an individual pharmacist the training required to undertake every possible prescribing role. As such, training standards and programs must be sufficiently flexible to enable the pharmacist to enhance their core prescribing skills in a way that is relevant to their prescribing scope.

Studies investigating the cost-effectiveness of pharmacist prescribing

The economic benefits of pharmacist prescribing have been infrequently studied. Further studies that expand our understanding of the potential contribution of pharmacist prescribing to healthcare efficiency are warranted.[21, 107]

Australian evidence

Hale et al. reviewed the cost savings associated with pharmacists prescribing venous thromboembolism (VTE) prophylaxis in the surgical setting compared to usual care. The authors concluded that pharmacist prescribing of VTE prophylaxis for surgical patients classified as high risk would result in a reduced incidence of VTE and associated cost savings based on a cost ($AU) per Quality Adjusted Life Year (QALY).[108]

International evidence

A randomised controlled pilot study reviewed the impact of independent pharmacist prescribers practising in UK general practice on chronic pain management.[109] In this study, consumers received a pharmacist medication review followed by either pharmacist prescribed medicines, pharmacist feedback to the general practitioner based on the medication review or treatment as usual (GP-led care). The results of this small study (125 consumers) suggest similar quality of life years between the groups but that the pharmacist-led groups may be slightly more expensive than usual treatment, with the authors concluding that further research is required.[109] The authors indicated there was a high level of

uncertainty regarding the economic analysis in this study and suggested that larger trials are required to further investigate the cost-effectiveness of pharmacist prescribing.[109]

Using the evidence provided by the Canadian study conducted by Tsuyuki et al. (described above[25]), Marra reviewed the economic benefits of pharmacists managing hypertension in the community (including prescribing required therapy). Across a 30-year time scale, this modelling indicated that pharmacist management of hypertension was an 'economically dominant' strategy compared to usual treatment, with an estimated cost saving of in excess of $6 000 per consumer.[110]

Review of the economic impact of the RxEACH study (in which pharmacists improved cardiovascular risk by prescribing and managing related risk factors [26]) suggests that community pharmacists contribute significant outcome benefits by reducing cardiovascular risk, beyond that provided by usual care, at multiple time points (3 and 12-months).[84] Healthcare costs associated with the pharmacist intervention were less than usual care and substantial when modelled over a lifetime.[111, 112]

Part A Key Messages

The evidence reviewed presents the following key messages for consideration:

- Studies investigating the outcomes of pharmacist prescribing have commonly focused on:
    - Pharmacist adherence to a defined protocol or guideline,
    - The accuracy of pharmacist generated prescriptions / medication orders,
    - The impact of pharmacist prescribed therapy on disease markers e.g., blood glucose, blood pressure, lipid profile.

- International evidence indicates that pharmacist *independent prescribers* make clinically appropriate and safe prescribing decisions and that those decisions are comparable to medical colleagues in the management of chronic illness.

- Systematic reviews suggest that pharmacists prescribing according to a *dependent* (e.g., protocol based) *or collaborative* model (medical officer responsible for diagnosis, pharmacist manages medicines according to diagnosis) in the hospital setting are not inferior to medical officers in their prescribing for the management of a range of chronic diseases.

- Australian studies have predominately been undertaken in the hospital setting and have focused on pharmacists either charting known medicines based on an accurate medicines history and/or charting medicines according to agreed protocols. Few randomised controlled trials have been undertaken.

- Legislative barriers have prevented the exploration of independent prescribing in Australia and have impacted studies conducted in the primary care setting by impeding the transferability of findings between states and territories.

- The available Australian evidence indicates that pharmacists contribute a high level of accuracy to the charting of medicines in acute care facilities and are skilled at understanding and applying protocols e.g., those that guide VTE prophylaxis, UTI management and vaccination.

Several practical considerations require attention:

- The language used to describe prescribing is complex and possibly confusing. In Australia, terminology describing essentially the same prescribing process differs between jurisdictions. For example, the terms collaborative prescribing, supplementary prescribing, partnered charting can all indicate a similar implementation model. A consistent language would improve understanding both within the profession, for professional colleagues and consumers.

- There is also a difference between the legislative definition of prescribing in each state/territory and the nationally agreed definition described in this review.

- A range of education and/or credentialling processes have been employed to prepare pharmacists to participate in studies. Education requirements have varied in their format and content. The importance of establishing a clear recommendation regarding education requirements to prescribe cannot be overstated.

- The ability to combine study results is impeded by state and territory based legislation that impacts study design. The resultant need to replicate study findings in new jurisdictions is cumbersome. However, without legislative harmonisation, it remains challenging to ensure study results hold applicability across jurisdictions. This issue was raised more than a decade ago in a scoping review conducted for the National Health Workforce Taskforce.[28]

Part B Accreditation of pharmacist prescriber education programs: international view

Aim

This review summarises the accreditation standards applied to pharmacist prescriber education programs outside of Australia.

Method

A desktop audit of accreditation details publicly identified via web searches of professional and/or accreditation organisations.

Findings

Education and training requirements to prescribe

The requirements to become a prescriber are articulated at either a national level, as is the case in New Zealand, Singapore and the UK, or at a jurisdictional level, as for Canada and the USA.

Additional education and training, beyond entry-level requirements, are commonly required for pharmacists to prescribe. New Zealand, Singapore and the UK offer formal prescriber training programs either specifically for pharmacists (NZ) [113] or for multiple professions (Singapore, UK). [114, 115] Program entry typically requires pharmacists to:

- hold current registration,
- have completed a period of clinical practice post initial registration,
- have an identified area of practice in which to develop a prescribing role, and
- have an authorised prescriber to support the development of prescribing skills and knowledge during the program.[113-115]

Program entry requirements have recently changed for UK based pharmacists from a specified two years of practice in a relevant clinical area to relevant experience and the ability to recognise, understand and articulate the skills and attributes required to prescribe.[116]

In the USA, state-based professional organisations define the required qualification/s for pharmacists to prescribe. This may include certification in an area of specialist practice with the (national) Board of Pharmacy Specialties (BPS) or completion of programs offered by

the state. For example, the Californian Pharmacists Association provides an Advanced Practice Pharmacist Certificate Program, which qualifies the pharmacist to prescribe according to an established protocol. [117] Canadian colleges of pharmacy located within each province or territory define the education and training requirements for pharmacists to prescribe within their jurisdiction. For example, the Alberta college of pharmacy defines the requirements for autonomous prescribing by pharmacists within that province. [118]

After completion of required education and/or training, regulatory authorities will generally provide an annotation or endorsement to the pharmacist's registration to indicate the prescribing qualification.

Accreditation Standards for Pharmacist Prescriber Education Programs

Regulation of pharmacist practice, including prescribing practice, is enacted at the national level in New Zealand (Pharmacy Council of New Zealand), Singapore (Singapore Pharmacy Council) and the UK (General Pharmaceutical Council), the provincial/territorial level in Canada (provincial/territorial colleges of pharmacy) and the state level in the USA (state boards of pharmacy). *Professional practice expectations* are, however, provided at a national level in both Canada and the USA and these may be reflected in state/provincial practice descriptions. For example, the National Association of Pharmacy Regulators (NAPRA) in Canada develops model standards of practice for pharmacists and pharmacy technicians[119] that may be used by provincial colleges of pharmacy; the American College of Clinical Pharmacy develops competencies for clinical pharmacists that may be implemented at the state level.[120]

Accreditation of pharmacy programs leading to an *entry-level* qualification is undertaken at a national level for all reviewed countries. Accreditation standards applicable to education programs that lead to a prescribing qualification are published in New Zealand and the UK.[121, 122] Singapore offers a national prescribing program for pharmacists and advanced practice nurses,[115] however the accreditation process for this program differs considerably to other countries and will not be reviewed. In Canada and the USA, education programs required for pharmacists to prescribe are developed by individual states/provinces/territories and may take many forms e.g., continuing education required to implement state-based protocols in the USA. This type of education and/or training may be accredited at a state level.

Accreditation of prescriber education programs in the UK [122]

The General Pharmaceutical Council (GPhC) is responsible for the accreditation of pharmacist prescriber programs in the UK. Accreditation standards for the education and training of pharmacist independent prescribers (2022) provide both the expected learning outcomes for pharmacist prescribers and the standards for education providers. Learning outcomes define the expected achievements for successful completion of a prescriber education program, based on Miller's hierarchy of educational outcomes, which categorises

achievements along a continuum from knowledge acquisition to performance (refer Figure 1). [123] The 32 **learning outcomes** are presented in four domains (refer Table 4):

- Person-centred care
- Professionalism
- Professional knowledge and skills
- Collaboration

Miller's Pyramid

George E Miller (1990) described a framework for assessment as learners move from early knowledge acquisition ("Knows") through the application of that knowledge ("Knows How") to the demonstration of both the knowledge and application of knowledge ("Shows How") and finally to the performance of a task as part of routine practice outside of the examination environment ("Does").[123]

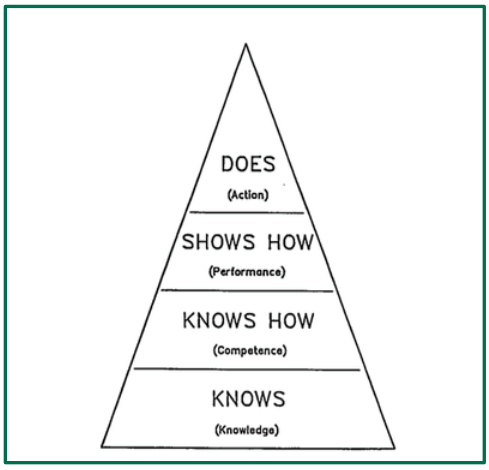

Figure 1 Miller's Pyramid of Assessment

Table 4 Learning outcomes for independent prescriber education and training (UK) [122]

Learning outcome	Required level
Domain: Person-centred care	
1. Recognise the psychological and physical impact of prescribing decisions on people	Knows how
2. Understand and meet their legal responsibilities under equality and human rights legislation and respect diversity and cultural differences	Does
3. Take responsibility for ensuring that person-centred care is not compromised because of personal values and beliefs	Does
4. Demonstrate appropriate history-taking techniques through effective consultation skills	Does
5. Demonstrate an understanding of the role of the prescriber in working in partnership with people who may not be able to make fully informed decisions about their health needs	Shows how
6. Support individuals to make informed choices that respect people's preferences	Does
Domain: Professionalism	
7. Demonstrate a critical understanding of their own role and the role of others in multi-professional teams	Does
8. Recognise their own role as a responsible and accountable prescriber who understands legal and ethical implications	Does
9. Apply relevant legislation and ethical frameworks related to prescribing, including remote prescribing and the handling and sharing of confidential information	Shows how
10. Recognise and manage factors that may influence prescribing decisions	Does
11. Apply local, regional and national guidelines, policies and legislation related to healthcare	Does
12. Reflect on and develop their own prescribing practice to ensure it represents current best practice	Does
13. Apply an understanding of health economics when making prescribing decisions	Shows how
14. Understand the clinical governance of the prescriber, who may also be in a position to supply medicines to people	Knows how
15. Recognise other professionals' practice and raise concerns related to inappropriate or unsafe prescribing by other prescribers	Shows how

Learning outcome	Required level
Domain: Professional knowledge and skills	
16. Apply evidence-based decision-making in all aspects of prescribing	Does
17. Manage the risks and benefits associated with prescribing decisions	Does
18. Demonstrate the application of pharmacology in relation to their own prescribing practice	Does
19. Demonstrate clinical and diagnostic skills in clinical settings appropriate to their scope of practice	Does
20. Create and maintain appropriate records which ensure safe and effective care and align with relevant legislation	Does
21. Identify relevant investigations and interpret results and data in their prescribing practice	Does
22. Utilise current and emerging systems and technologies in safe prescribing	Does
23. Identify and respond to people's needs when prescribing remotely	Shows how
24. Apply the principles of effective monitoring and management to improve patient outcomes	Does
25. Recognise and manage prescribing and medication errors	Shows how
26. Recognise the public health issues in promoting health as part of their prescribing practice	Does
Domain: Collaboration	
27. Work collaboratively with others to optimise individuals' care, understanding their roles in the prescribing process	Does
28. Recognise their own role and responsibilities, and those of others, in safeguarding children and vulnerable adults	Knows how
29. Recognise when and where to refer people appropriately	Shows how
30. Collaborate with people to encourage them to take responsibility for managing care	Does
31. Demonstrate appropriate consultation skills to get information from individuals who are either unaware of or guarded about their health needs, to inform safe prescribing	Does

Learning outcome	Required level
32. Recognise when to seek guidance from another member of the healthcare team or an appropriate authority	Does

The **standards for education providers** describe the entry requirements for a prescriber education program, nine standards and associated criteria. The standards, summarised in Table 5, indicate (in the Introduction) that independent prescriber programs must be of a Master's level, as defined by UK national qualification frameworks and must include:[122]

- Structured learning of at least 26 days, and
- A period of learning in practice of at least 90 hours undertaken in a clinical setting with direct access to patients and under the supervision of a designated prescribing practitioner.

Table 5 Accreditation Standards for the education and training of pharmacist independent prescribers (2022), General Pharmaceutical Council [122]

Standard	Description
Standard 1 Selection and entry requirements	Selection processes must be clear, consistent and unbiased, comply with relevant legislation and ensure that applicants meet the course entry requirements.
Note that entry requirements have changed from a minimum of two years' experience in a specific area to a requirement for applicants to have relevant experience in a pharmacy setting, the ability to recognise, understand and articulate the skills and attributes required by a prescriber AND identify an area of practice to base their learning. This requirement is detailed in the standard 1criteria.	
Standard 2 Quality, diversity and inclusion	All aspects of pharmacist independent prescribing education and training must be based on and promote principles of equality and diversity and comply with all relevant legislation.
Standard 3 Management, resources and capacity	Courses must be planned and maintained through transparent processes which must show who is accountable for what. The education and training facilities, infrastructure, leadership, staffing and staff support must be sufficient to deliver the course.
Standard 4 Monitoring, review and evaluation	The quality of a course must be monitored, reviewed and evaluated in a systematic and developmental way.
Standard 5 Course design and delivery	Courses must develop the behaviours, required skills, knowledge and understanding to meet the outcomes in Part 1 of these standards through a coherent teaching and learning strategy.
Standard 6 Learning in practice	Courses must enable the pharmacist independent prescriber in training to develop the behaviours and the required skills, knowledge and understanding to meet the outcomes in Part 1 of these standards in learning in practice settings.
Standard 7 Assessment	Courses must have an assessment strategy which assesses the professional behaviours and the required skills, knowledge and understanding to meet the outcomes in Part 1 of these standards. The assessment strategy must assess whether the practice of a pharmacist independent prescriber in training is safe and clinically appropriate.
Standard 8 Support and the learning experience	Pharmacist independent prescribers in training must be supported in all learning environments to develop as learners during their training.
Standard 9 Designated prescribing practitioners	Designated prescribing practitioners must be fit to undertake that role and must have appropriate training and experience.

The process for accreditation involves submission of a self-assessment completed by the education provider, an accreditation event during which an accreditation panel will meet with

the program provider, the development of an accreditation report and subsequent publishing of the accreditation outcome. Programs require reaccreditation every six years with an interim review every three years.[124]

After successful completion of an education program accredited by the GPhC, a practice certificate in independent prescribing is issued, allowing the pharmacist to apply for annotation as a prescriber on the register.[125]

Similar to the standards for prescriber training, current accreditation standards for *entry-level* education programs define required learning outcomes and expected standards for education providers.[126] The standards indicate that the learning outcomes are applicable to prescribing practice across all domains and reflect national prescribing competencies.[127] Pharmacists trained in the UK will be eligible to prescribe medicines on registration from 2026 provided they were trained according to the current standards, pass required assessments and meet registration criteria.[128-130]

Accreditation of prescriber education programs in New Zealand

The Pharmacy Council of New Zealand (PCNZ) is responsible for the accreditation of prescriber education programs in New Zealand. Accreditation standards for prescriber education programs in New Zealand have been adapted from the standards applicable in the UK, described above. Programs are required to address the eight competency areas described in the Prescribing Competency Framework for the Pharmacist Prescriber Scope of Practice.[121] The Pharmacist Prescriber Scope of Practice stipulates that pharmacist prescribers are required to:[131]

- prescribe within their limits of expertise and competence,
- comply with ethical codes of practice,
- prescribe within a collaborative health team,
- not be the primary diagnostician.

Table 6 provides a summary of the standards and an indication of the major criteria to meet each standard.

The standards stipulate that pharmacist prescriber education programs must be:[121]

- university based,
- postgraduate level qualification,
- comprise the equivalent of 600 hours of study, and
- include a period of practical training of 300 hours of which half is supervised by a designated medical practitioner.

Table 6 Accreditation Standards for the Prescribed Qualification. Pharmacist Prescriber Scope of Practice (New Zealand) [121]

Standard	Description (summary)
Standard 1	Qualification development and learning outcomes • The duration of the program (equivalent of 600 hours total) • The program must be based on the principles of interprofessional education and collaboration • Teaching, learning and support strategies allow pharmacists to build on their background knowledge and experience • The program should provide opportunities for pharmacists to demonstrate application of learning to their area of practice • Programs must demonstrate that students achieve the defined learning outcomes for the pharmacist prescriber scope of practice
Standard 2	The education provider • Required resources • Staff background and experience • Curriculum design input from a practising pharmacist with appropriate background and expertise
Standard 3	Prescribing practicum entry requirements • Entrants must hold registration in the pharmacist scope of practice and hold an annual practising certificate • Entrants must have a minimum of two years of recent, appropriate, relevant post-registration experience in a collaborative health team environment • Entrants must demonstrate that competence standards 1,2,4,5 of the Pharmacist scope of practice are applicable to their current practice • Identify an area of clinical practice to develop prescribing skills • Demonstrate reflection and maintain responsibility for CPD • Identify a designated medical practitioner and possible prescribing role. • Must have discussed possible prescribing role within the team in which they hope to prescribe
Standard 4	Prescribing Practicum • Requirements, including duration equivalent to 300 hours • Supervised practice that must include diagnostic, consultation, assessment, clinical decision making and monitoring skills • Provider Responsibility: ensure appropriate training and experience of the designated supervisor, familiar with the qualification requirements, provide support for the supervisor, obtain evidence of supervised practice
Standard 5	Assessment and reporting • Range of sources • Ensure pharmacist has achieved defined learning outcomes • Assess prescribing separately from any other course components • Test all aspects of prescribing including confirmation of clinical and physical examination skills.

In addition, the standards define required learning outcomes (refer Table 7), indicative program content and teaching, learning and assessment strategies. Accreditation of prescriber programs in NZ was previously undertaken by the Australian Pharmacy Council (APC), however will be subject to a new accreditation process when re-accreditation is required, due to a change in the arrangements between APC and NZ authorities.

Table 7 Accreditation standards for the prescribed qualification (Pharmacist prescriber scope of practice) learning outcomes [131]

Following successful completion of the qualification, pharmacist prescribers will be able to:

Learning Outcome Number	Learning Outcome Detail
1	Optimise medicines related health outcomes for individual patients in a collaborative health team environment.
2	Understand the responsibilities that the role of pharmacist prescriber entails, be aware of their own limitations and work within the limits of their professional competence – knowing when and how to refer / consult / seek guidance from another member of the interprofessional health care team.
3	Develop and maintain effective relationships, and communicate effectively, with patients, carers, other prescribers and members of the inter-professional health care team.
4	Describe the pathophysiology of the condition being treated and recognise the signs and symptoms of illness, take an accurate history and carry out a relevant clinical assessment where necessary.
5	Use common diagnostic aids e.g., stethoscope, sphygmomanometer.
6	Able to use diagnostic aids relevant to area of practice in which the pharmacist intends to prescribe, including monitoring response to therapy.
7	Apply clinical assessment skills to: • inform a working/confirmed diagnosis • formulate a treatment plan • the prescribing of one or more medicines if appropriate • conduct a checking process to ensure patient safety • monitor response to therapy, review the working/differential diagnosis and modify treatment or refer / consult / seek guidance as appropriate.
8	Demonstrate a shared approach to decision making by assessing patients' needs for medicines, taking account of their wishes and values and those of their carers when making prescribing decisions.

Learning Outcome Number	Learning Outcome Detail
9	Identify and assess sources of information, advice and decision support and demonstrate how they will use them in patient care taking into account evidence based practice and national/local guidelines where they exist.
10	Recognise, evaluate and respond to influences on prescribing practice at individual, local and national levels.
11	Prescribe safely, appropriately and with awareness of costs.
12	Work within a prescribing partnership.
13	Maintain accurate, effective and timely records of the consultation and ensure that other prescribers and members of the interprofessional healthcare team are appropriately informed.
14	Demonstrate an understanding of the public health issues related to medicines use.
15	Demonstrate an understanding of the legal, ethical and professional framework for accountability and responsibility in relation to prescribing.
16	Work within clinical governance frameworks that include audit of prescribing practice and personal development.
17	Participate regularly in CPD and maintain a record of their CPD activity.

After successful completion of an accredited prescriber program, pharmacists can apply for registration and a practising licence in the pharmacist prescriber scope of practice.[132]

The PCNZ also produces practice standards and guidance for pharmacist prescribers which includes required competencies and ethical obligations of the pharmacist prescriber.[133] The document emphasises that prescribers must practice according to their professional competence and notes (statement 5.2) that pharmacists must:

'Consider the competence and professional requirements of your role if you change your collaborative health team environment and/or extend your prescribing activities. You may need to undertake additional training to ensure you are competent to prescribe in a new area of practice.'[133]

The document also indicates (statement 6.3) that pharmacist prescribers must *'Have robust procedures in place to ensure the separation of prescribing and dispensing.'*

The collaborative nature of prescribing

As described above, pharmacist prescriber education programs in the UK and NZ include a period of supervised work-based training. Effective collaboration between prescribers is recognised as important to ensure prescribing decisions align with current consumer need. Literature suggests that teaching prescribing should be undertaken in the practice context to support the 'social' nature of prescribing skill development[134] and to reinforce the important role interprofessional collaboration plays in safe and effective prescribing.[135, 136]

A view of pharmacist prescribing internationally

After successful completion of required education and training and the application of endorsements, pharmacist prescribing practice varies between countries. The descriptions below provide a summary of what pharmacist prescribing looks like internationally.

Table 8 International summary of pharmacist prescribing

Country	United Kingdom
Requirements to prescribe	• Registration with General Pharmaceutical Council (GPhC). • Annotation to registration which is currently achieved by completion of a nationally accredited prescriber education program. Programs require both structured learning (of at least 26 days) and practical learning (of at least 90 hours). • Practice certification in independent prescribing issued by the GPhC.
From 2026, all newly qualified pharmacists will be authorised to prescribe independently upon registration.[129, 130]	
What can pharmacists prescribe?	According to professional competence and expertise, pharmacists can prescribe all licensed and unlicensed medicines, controlled drugs (with some exceptions) and appliances. Medicines can be prescribed off licence according to accepted clinical practice.[137]
Where can pharmacists prescribe?	Endorsed pharmacists prescribe in primary and acute care settings according to local policy.[16, 138] Independent prescribing pilots that allow pharmacists to prescribe in both community and integrated care facilities in every region of England will begin in 2023.[129]
CPD requirements for prescribers	All pharmacists must demonstrate their commitment to professional development according to the revalidation framework, which requires demonstration of reflective practice and evidence of activities undertaken to directly improve practice.[139] There are no specific requirements for independent prescribers.
Examples	• A pharmacist working in the emergency care unit of an acute care hospital reviews and prescribes regular medicines for consumers during the admission process.[18]

	• A pharmacist working in an integrated general practice alongside the general practitioner, nurse practitioner and team receptionist prescribes medicines for consumers with complex health needs and those recently discharged from hospital, monitors the outcome of prescribed medicines and manages chronic illness.[140]	
Country	New Zealand	
Requirements to prescribe[141]	• Annual practising certificate in the pharmacist scope of practice and at least three years post registration experience working in a collaborative health team. • Completion of accredited postgraduate prescriber education program comprising the equivalent of 600 hours of study, half of which must be practical learning. • Registration in the Pharmacist Prescriber scope of practice. • Submission of a practice plan endorsed by the clinical leader, which indicates prescribing occurs in a collaborative team environment.	
What can pharmacists prescribe?	Pharmacists prescribe from an approved list of medicines defined in the Medicines (Designated Pharmacist Prescribers) Regulations.[142]	
Where can pharmacists prescribe?	Pharmacists prescribe in collaborative team settings in which the healthcare team share information regarding consumers in their care.[143]	
CPD requirements for prescribers	Requirements for recertification include evidence of continuing professional development relevant to practice but do not require additional or different evidence for prescribers.[144] Standards relevant to pharmacist prescribers indicate a requirement for prescribers to maintain the quality of their prescribing practice through CPD and other activities.[133]	
Example	A pharmacist prescriber working in a hypertension clinic in a multidisciplinary primary care setting reviews the outcome of prescribed medicines. This may include conducting a clinical review of blood pressure and ordering any required laboratory investigations before prescribing ongoing medicines as appropriate.[145]	
Country	Canada	
Example Provinces*	Alberta	Ontario
***Pharmacist prescribing varies across Canada. Details are provided for two provinces as an indication of the differences**.*		
Requirements to prescribe	All pharmacists registered on the clinical register of the Alberta College of Pharmacy can prescribe in an emergency and adapt prescriptions. Additional prescribing authorisation (APA)* permits pharmacists to initiate	Registration with the Ontario College of Pharmacists and completion of any mandatory modules (e.g., for minor ailments prescribing).

	medicines and manage ongoing therapy.[146]	
What can pharmacists prescribe?	All pharmacists registered on the Alberta College of Pharmacy clinical register can prescribe all Schedule 1 (prescription only) medicines according to competence. [147] Pharmacists with Additional Prescribing Authorisation (APA) can independently prescribe for all medicines. Those without APA prescribe according to a collaborative practice agreement or in a collaborative setting.[148] All pharmacists registered on the Alberta College of Pharmacy clinical register can prescribe narcotics, controlled and targeted drugs according to specific legislative exemptions.[149] Off-label prescribing is only permitted for an indication approved by Health Canada, where use is considered best practice or as part of an approved research protocol.[150]	Pharmacists can prescribe medicines in an emergency, for smoking cessation and, as of 2023, for a range of minor ailments provided they complete an orientation module.[148, 151] The minor ailments prescribing module has been developed by the Ontario College of Pharmacists. Pharmacists are not authorised to make a therapeutic substitution or inject drugs (other than vaccines). [148]
Where can pharmacists prescribe?	Unrestricted	Unrestricted
CPD requirements for prescribers	All pharmacists must meet the requirements of the continuing competence program which includes an annual CPD requirement and portfolio submission. Pharmacists with APA do not have additional CPD requirements.[152]	All pharmacists are required to demonstrate their ongoing professional development including the maintenance of a learning portfolio.[153]
Example	All pharmacists: adjust prescribed dose according to renal function. APA: Initiate inhaled corticosteroid to improve respiratory function in an asthmatic consumer.[154]	A pharmacist working in a community setting prescribes antibiotics for an uncomplicated urinary tract infection.
*To apply for Additional Prescribing Authorisation (APA) a pharmacist must have:[118] • At least one-year full time experience as a pharmacist in direct patient care • A strong relationship with other regulated health professionals • The necessary knowledge, skills, attitudes and clinical judgement to enhance patient care • The required support to enable safe and effective drug therapy management (e.g., access to information, communication, documentation processes)		

Pharmacists apply for APA and must demonstrate their capabilities by submitting cases that describe their involvement in patient care including their skills and knowledge. Submissions are assessed according to an objective criterion-referenced assessment.	
Country	**United States of America**
Requirements to prescribe[10]	Broadly, pharmacists prescribe according to a collaborative agreement held with another prescriber or according to a prescribing protocol. Collaborative prescribing can be governed by either a patient-specific or population-specific agreement. 'Autonomous' prescribing allows the pharmacist to prescribe according to either a state-wide protocol or a class specific protocol. This may also be considered prescribing according to a structured protocol. Collaborative agreements define the medicines that can be prescribed, the consumer (or consumer group) for whom pharmacist prescribing applies and whether prescribing involves initiation of medicines or modifying existing medicines. In some states, additional qualifications are required prior to prescribing via this mechanism.
What can pharmacists prescribe?	Wide variation. Pharmacists prescribe according to protocols or collaborative practice agreements. State-wide protocols generally cover public health directives e.g., smoking cessation.
Where can pharmacists prescribe?	Variety of settings according to state-based arrangements.
CPD requirements for prescribers	Varies depending on state requirements. For example, New Mexico requires pharmacists to complete continuing education to support the prescription of hormonal contraception. [155, 156]

Example	New Mexico
	
	• **Pharmacists** who complete:
	  ○ An accredited* course of training that includes specific topics (e.g., mechanism of action, contraindications, monitoring, counselling, interviewing & referring consumers, informed consent and other relevant topics) provided by a health authority approved by the state board of pharmacy and
	  ○ Regular continuing education relevant to hormonal contraception
	
	can prescribe hormonal contraception according to a written protocol approved by the state board of pharmacy.
	
	• **Pharmacist clinicians** complete[157]:
	  ○ 60 hours of physical assessment training
	  ○ 150 hours, 300-patient-contact supervised practice supervised by a physician or other practitioner with prescriptive authority
	  ○ Board of Pharmacy Specialties certification
	
	and establish a collaborative practice agreement with another practitioner. This permits the pharmacist clinician to initiate, modify or discontinue

	medicines, perform physical examinations and order tests under the supervision of the collaborating practitioner.[10, 155, 157] *Accredited by the Accreditation Council for Pharmacy Education (ACPE)

Part B Key Messages

The education and training requirements to be recognised as a pharmacist prescriber and relevant accreditation standards for pharmacist prescriber education were sought for Canada, New Zealand (NZ), Singapore, the United Kingdom (UK) and the United States of America (USA). Accreditation standards for programs provided in NZ and UK were identified and reviewed. Key messages from this review include:

- In most countries, pharmacists are required to undertake additional education to prescribe. This may consist of continuing education (CE) relevant to a specific topic or a formal postgraduate program of study and may be determined nationally, as in the UK, or at a jurisdictional level, as for Canada and the USA.

- The education and training required to achieve authorisation to prescribe medicines and the boundaries applied to prescribing, such as the medicines and diseases for which prescribing is permitted, differ not just between countries but, in some cases, within countries.

- Postgraduate programs offered in the UK and New Zealand are accredited and subject to regular accreditation reviews. Continuing education offered for prescribers in the USA and Canada may be accredited according to local accreditation processes.

- Similar to entry-level programs, the accreditation standards for postgraduate prescriber education programs define expectations related to program development, design and quality assurance, required resources, student selection process, student experience and the expected outcomes of the program.

- Accreditation standards in New Zealand and the UK specify the qualification level required of pharmacist prescriber programs and the requirements for supervised practical training.

Part C Accreditation of prescriber education programs in Australia

Aim

This review summarises the accreditation standards relevant to prescribing for Australian health professional education programs.

Method

A review of accreditation standards applicable to health professions that currently prescribe medicines in Australia was undertaken using publicly available information. Standards that specifically address the prescribing of medicines were identified and reviewed. Where accreditation standards referred to supporting documents such as competency statements or professional practice standards, the relevant components of those documents have been included in the summary.

Findings

Background

Australia's prescribing workforce currently consists of a range of health professionals, including dental practitioners, medical practitioners, endorsed midwives, nurse practitioners, endorsed optometrists and endorsed podiatrists. For some professions, the authority to prescribe medicines is granted upon initial registration, while others are required to undertake additional education and training beyond the entry-level program to achieve endorsement to prescribe scheduled medicines. Table 9 summarises prescribing by health professions in Australia.

Pharmacists are currently authorised to supply medicines included in Schedules 2 (pharmacy only) and 3 (pharmacist only) of The Poisons Standard[158] (SUSMP, October 2022). This requires the pharmacist to understand the consumer's needs, make a clinical decision regarding optimal therapy (which may or may not include medicines), and communicate that decision with the consumer. This process includes three of the four stages in the prescribing process, according to the Australian definition.[1]

Table 9 Summary of prescribing professions in Australia

Profession	Prescribing authority	Prescribing process
Dental practitioner	At registration	• Independent • Approved list of medicines
Medical practitioner	At registration	• Independent • Unrestricted medicines
Endorsed midwife	After completion of additional education and training	• Independent • Approved list of medicines
Nurse practitioner	At registration	• Independent • Unrestricted medicines
Endorsed Optometrist	At registration*	• Independent • Approved list of medicines
Endorsed Podiatrist & Podiatric Surgeon	After completion of additional education and training	• Independent • Approved list of medicines

**Entry-level programs that entitled graduates to obtain an endorsement to prescribe scheduled medicines have been available since 2013. Optometrists who completed their entry-level program prior to this date and seek prescribing endorsement are required to complete additional education and training in the form of a postgraduate ocular therapeutics program.*

Education and training to prescribe medicines

Professions that currently require additional education and training (beyond entry-level programs) to prescribe medicines include midwives, podiatrists, podiatric surgeons and optometrists who completed their entry-level training prior to 2013. Registered nurses must complete additional education and training at the Master's level to qualify as a nurse practitioner (NP). While this does qualify the graduate to prescribe medicines, the NP program does not solely focus on prescribing.

Midwives

Education programs that enable registered midwives to apply for endorsement for scheduled medicines (ESM)[159] are provided in a range of university based postgraduate formats, including full and part-time, on campus and online.[160]

Podiatrists and Podiatric Surgeons

An endorsement to prescribe medicines is achieved via one of two pathways.[161] Podiatrists who complete an entry-level program of study approved by the Podiatry Board of Australia can apply for an endorsement for scheduled medicines (ESM) via Pathway A. The second pathway (Pathway B) applies to those who have obtained their podiatric qualification prior to the inclusion of pharmacology and therapeutics in the entry-level program. In this case, an approved qualification in podiatric therapeutics can be completed. Programs are provided at a postgraduate certificate level [162] designed to prepare podiatrists for a prescribing role. After successful completion of the program, the Board requires completion of online case studies, a twelve-month period of supervised practice undertaken under the guidance of an approved mentor and submission of a portfolio of evidence relating to prescribing practice.[161]

Optometrists

Optometrists who did not complete a program of study that enabled prescribing authority on registration can complete a postgraduate university-based program in ocular therapeutics and apply for an endorsement for scheduled medicines.[163]

Accreditation standards relevant to prescribing for Australian health professions

A detailed summary of the accreditation standards for Australian health professionals that prescribe medicines is provided in Appendix One. The following provides a summary of the standards.

Structure of the accreditation standards

The reviewed accreditation standards differ slightly in their structure, although most comprise an overarching standard, a statement explaining the statement and criteria that further describe the expectations of the program provider. Standards may be further grouped in domains.

Prescribing detail

Accreditation standards typically refer program providers to professional practice descriptions (e.g., professional practice standards or documents detailing required professional competencies or capabilities) with a requirement that program learning outcomes and/or assessments align with these descriptions. The level of detail regarding prescribing identified in the accreditation standards and professional practice documents differs between professions. The following examples illustrate these differences.

Example 1:

The accreditation standards for dental practitioner programs (Australian Dental Council) indicate that the appropriate professional competencies are addressed by the program. Standard 3.2: *“Program learning outcomes address all the required professional*

competencies." Standard 5.2 indicates that all professional competencies should be mapped and assessed.[164]

Example 2:

The accreditation standards for programs leading to endorsement for scheduled medicines for midwives (Australian Nursing and Midwifery Council) includes multiple standards that describe program requirements regarding the development of prescribing skills and knowledge. With a clear focus on prescribing, the standards require evidence that the program philosophy, structure and content align with the NPS MedicineWise Prescribing Competencies Framework and the relevant practice standards.[165]

Professional practice descriptions vary in the detail they provide regarding prescribing. In some cases, broad principles related to prescribing are included, while others include significant detail regarding the prescribing process and the implications for professional practice.

For example, the Professional Competencies of the Newly Qualified Dentist (Australian Dental Council)[166] describes an expectation that *dentists apply the principles of pharmacology, understand the risks of using therapeutic agents and the implications of the Prescribing Competencies Framework on dental practice* (Standard 5.6 summarised). There is also an expectation that in providing person-centred care dentists *'Administer, apply and/or prescribe medicines.'* (Standard 6.3.7) Entry-level competencies for dental specialties also describe broad expectations regarding prescribing.[167, 168]

Prescribing is included in detail across multiple standards in The Nurse Practitioner Standards for Practice.[169] Standards two and three describe planning care and the prescribing process and include the need to apply quality use of medicines principles, evidence and accountability to these processes.[169]

The entry-level competency standards for optometry, currently under review, describe practice expectations related to the prescribing process in detail, including:

- the principles of evidence-based prescribing,
- referral to and collaboration with other health professionals,
- documentation of prescribing decisions,
- monitoring of prescribed therapy, and
- awareness of the risk of poor adherence to prescribed therapy.[170]

Definition of prescribing

The definition of prescribing varies between professions. In some cases, a definition is provided in the accreditation standards while for others the definition is included in professional practice documents.

The Australian Nursing and Midwifery Council provides an extensive glossary applicable to all standards.[171] The glossary includes a definition of prescribing that reflects the definition provided in the Nurse Practitioner Standards for Practice[169] and aligns with the Australian definition of prescribing.[1] The glossary also defines related concepts including pharmacodynamics, pharmacokinetics, pharmacotherapeutics, Pharmaceutical Benefits Scheme.[171]

Prescribing is defined in the accreditation standards for entry-level optometry programs (defined as 'therapeutic practice')[172] and ocular therapeutics programs (defined as 'ocular therapeutic practice').[173]

Entry-level podiatry programs and podiatrist prescriber programs refer to the Australian definition provided in the professional capabilities document.[174]

Accreditation standards for primary medical programs, entry-level dental practitioner programs and entry-level pharmacist programs do not include a definition of prescribing.

Curriculum

Standards include varying detail regarding the expected curriculum content related to prescribing and the process of designing and delivering the program.

Reference to the Prescribing Competencies Framework (the Framework)

Standards that describe the expectations of curriculum content may require programs to align with the Framework. For example, standards for midwife prescriber, nurse practitioner, entry-level optometry, ocular therapeutics and entry-level podiatry programs/podiatric surgery (that provide a pathway to prescribing endorsement) specifically reference the Framework, either in the standards or the guidance provided for education providers to meet the standards. In most cases, the standards indicate that curriculum learning outcomes and assessments should be mapped to the Framework.

Programs designed to provide postgraduate prescriber education and training for registered podiatrists must describe how learning outcomes and assessments map to the professional capabilities for podiatrists, which specifically references prescribing and the Framework.

Professional competencies applicable to newly qualified dentists indicate that dentists should *'understand the implications of the Framework to their dental practice.'*

Accreditation standards for primary medical programs and entry-level pharmacist programs do not reference the Framework.

Assessment of prescribing

The accreditation standards for established prescribing professions are less likely to include a requirement for programs to specifically assess prescribing than for those more recently authorised to prescribe.

Accreditation standards for entry-level optometry and ocular therapeutics programs require the assessment of professional competencies, which include prescribing. Podiatry and podiatric surgery programs are required to assess relevant professional capabilities which will include prescribing where the program prepares the graduate for prescribing endorsement.

Accreditation standards for midwife prescriber programs specifically require assessment of prescribing ability: *'Summative assessments of student achievement of competence against the current National Prescribing Competency Framework within midwifery practice, conducted by a health professional who is appropriately qualified, prepared and able to demonstrate current experience in assessing prescribing practice in an Australian midwifery context before program completion.'* (Standard 5.11)[165] Nurse practitioner accreditation standards require a *'comprehensive, summative assessment of the student's achievement of the nurse practitioner standards for practice on program completion'*[175] which specify prescribing.

Contribution of prescribing expertise to curriculum design

Accreditation standards may include a requirement that professionals with prescribing expertise contribute to program governance and/or design. In addition, standards may require that teaching and/or staff involved in student supervision have prescribing expertise. Table 10 provides a summary of the governance, curriculum design and teaching/supervisory staff requirements identified in the reviewed standards.

Inclusion of supervised practical training that includes prescribing

The accreditation standards for programs designed to achieve a prescribing endorsement generally include a requirement for students to be provided with sufficient diverse experiences to develop prescribing skills and meet required practice standards or prescribing competencies. This is not a feature of accreditation of standards established prescribing professions.

Table 10 Contribution of prescribing expertise to education programs

Program area	Identified Accreditation Standards	Standard detail
Program Governance	Midwife prescriber programs (165)	Standard 1.5 Terms of reference for the relevant program advisory committees demonstrating partnerships with key stakeholders, including representatives with specific **expertise in scheduled medicines** and Aboriginal and Torres Strait Islander health professionals and committees.
	Ocular therapeutics programs (173)	Standard 2.3 There is relevant external input to the design and management of the program, including from representatives of the optometry profession who have **expertise in ocular therapeutics**.
Curriculum design	Midwife prescriber programs (165)	The program provider must demonstrate evidence of: Standard 3.1 Consultative and collaborative approaches to curriculum design and program organisation between academic staff, those working in midwifery practice, those with **pharmacology and medication management expertise**, students, consumers and other key stakeholders, including Aboriginal and Torres Strait Islander health professionals.
Teaching staff	Nurse practitioner programs (175)	The program provider demonstrates: Standard 7.8 Staff teaching and assessing nursing practitioner specific subjects, including those with pharmacology, advanced health assessment and diagnostics (pathology and medical imaging) content, have **relevant clinical and academic qualifications and experience.** Standard 8.9 Nominated professionals in the student's clinical and professional support team undertake assessment of the student against the Nurse Practitioner Standards for Practice* within the context of integrated professional practice experience.
Student supervision	Entry-level podiatry programs that address ESM requirements (179)	Criterion 1.4 Specifies that formal arrangements are implemented that 'ensure practitioners supervising students have **experience in the education and supervision of work-integrated learning**.' This could be: • A podiatrist or podiatric surgeon whose registration is endorsed for scheduled medicines, or

		• A practitioner who holds registration in another profession and whose scope of practice includes prescribing and administering scheduled medicines such as a registered medical practitioner or a registered nurse practitioner.

Part C Key Messages

The key messages identified in this review include:

- Accreditation standards tend to reflect the prescribing status of the profession, with those most recently endorsed to prescribe including more explicit detail regarding prescribing compared to those for established prescribing professions.

- Typically, accreditation standards refer to documents that define professional practice, indicating that programs align their learning outcomes and assessments with the practice descriptions. Prescribing is included to varying degrees in documents that define professional practice.

- The accreditation standards for a number of professions include specific reference to the NPS MedicineWise Prescribing Competencies Framework. In most cases, accreditation standards require mapping of learning outcomes and/or assessments to the Framework.

- Professions may include a definition of prescribing in the accreditation standards or professional practice descriptions. Definitions are not consistent between professions and not all professions define prescribing.

- Recently endorsed prescribing professions e.g., optometry, midwifery, nurse practitioner, podiatry commonly include a requirement for programs to demonstrate that students receive adequate supervised practical prescribing experience to develop required competencies.

- Recently endorsed prescribing professions are more likely to specify a requirement for prescribing knowledge and skill to be explicitly assessed when compared to established prescribers.

- In some areas, programs for newer prescribers specify detail that could be argued is less relevant for established prescriber programs. For example, the requirement for programs to include staff with prescribing expertise in curriculum development and/or teaching is particularly relevant to programs developed for new prescribing professions but may be less so for established prescribing professions.

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Appendix One: Accreditation standards relevant to prescribing for Australian health professions

The following provides a summary of the accreditation standards applicable to prescribing for professions who are eligible to prescribe medicines in Australia, either at the point of registration or after the completion of additional education and training as described above. Where accreditation standards refer to additional practice descriptions e.g., professional competencies or standards, the relevant sections of those documents have been included.

Medical Practitioners

The Australian Medical Council provides accreditation standards for both primary and specialist medical programs.

(a) Primary Medical Programs

Standards	Standards for Assessment and Accreditation of Primary Medical Programs by the Australian Medical Council (2012)[176]

Definition of Prescribing

Not included

Accreditation Standards

The accreditation standards include graduate outcome statements and standards for education providers. The standards do not specifically reference prescribing, however indicate in Standard 2.2 (Medical Program Outcomes) that the provider must have defined graduate outcomes that are consistent with the AMC Graduate Outcome Statements. The glossary indicates that *'graduate outcomes are the learning outcomes that the program graduate must achieve.'*

In addition, Accreditation Standard 5.1.1 (Assessment approach) indicates that *'The medical education provider's assessment policy describes its assessment philosophy, principles, practices and rules. The assessment aligns with learning outcomes and is based on the principles of objectivity, fairness and transparency.'*

Graduate Outcome Statements

Domain 2 Clinical practice: the medical graduate as practitioner

Statement 2.11 Prescribe medications safely, effectively and economically using objective evidence. Safely administer other therapeutic agents including fluid, electrolytes, blood products and selected inhalational agents.

This suggest that prescribing, as defined in the Graduate Outcomes Statement 2.11, should form an identifiable component of the curriculum and assessed as a program outcome.

(b) Specialist Medical Programs

Standards	Standards for Assessment and Accreditation of Specialist Medical Programs and Professional Development Programs by the Australian Medical Council (2015)[177]

Definition of Prescribing

Not included

Accreditation Standards

Standards do not specifically reference prescribing although Standard 2.3.1 (Graduate outcomes) indicates that *'The education provider has defined graduate outcomes for each of its specialist medical programs including any subspecialty programs. These outcomes are based on the field of specialty practice and the specialists' role in the delivery of health care and describe the attributes and competencies required by the specialist in this role.'*

The 'Notes' section of Standard 2.3 indicate that the graduate outcomes describe the minimum learning outcomes that a graduate of the specialist program must achieve.

Standard 5 (Assessment of learning), Standard 5.1.1 indicates that *'The education provider has a program of assessment aligned to the outcomes and curriculum of the specialist medical program which enables progressive judgements to be made about trainee's preparedness for specialist practice.'*

An example is the RACGP 2022 Curriculum core competency framework, which defines the core competency outcomes for doctors completing general practice training.[178] This framework includes one competency in Domain 2 (Applied professional knowledge and skills) which is relevant to prescribing:

Core competency outcome 2.19 Prescribe and monitor medication safely and appropriately.

Dental Practitioners

Standards and Competencies	Accreditation standards for dental practitioner programs (2021)[164]
	Professional Competencies of the Newly Qualified Dentist (Australian Dental Council 2022)[166] *Effective 2023.*

Definition of Prescribing

Not included

Accreditation Standards

Table A11 Australian Dental Council accreditation standards for dental practitioner programs relevant to prescribing medicines [164]

Accreditation Standard	Criteria
3 – Program of Study	3.2 Program learning outcomes address all the required professional competencies
5- Assessment	5.2 All required professional competencies are mapped to learning outcomes and are assessed

Table A12 Dental competencies relevant to prescribing medicines

Professional Competencies of the Newly Qualified Dentist*[166] Australian Dental Council	Entry-level Competencies for Dental Specialties**[167] Dental Board of Australia, Dental Council New Zealand	Entry-level Competencies: Conscious Sedation Endorsement[168] Dental Board of Australia
Domain 5 – Scientific and Clinical Knowledge 5.6 (Dentists*) Apply the principles of pharmacology, understanding the limitations and risks of using therapeutic agents, including polypharmacy and overuse, and the implication of the Prescribing Competencies Framework on dental practice.	The competencies for dental specialties build on those defined for the newly qualified dentist and cover a range of specialties. Prescribing medicines will not apply to all specialties. **Domain 4 Scientific and Clinical Knowledge** **Domain 5 Patient care**	**Domain 4 Scientific and clinical knowledge** A graduate endorsed conscious sedation dentist is expected to be competent in the knowledge of, relevant to conscious sedation, the: (e) limitations and risks of the various techniques used to induce conscious sedation

Professional Competencies of the Newly Qualified Dentist*[166] Australian Dental Council	Entry-level Competencies for Dental Specialties**[167] Dental Board of Australia, Dental Council New Zealand	Entry-level Competencies: Conscious Sedation Endorsement[168] Dental Board of Australia
Domain 6 – Person-centred care 6.3 Clinical treatment and evaluation 6.3.7 Administer, apply and/or prescribe medicines. *ADC notes (in the introductory statement under 'Use of the Competencies') that 'Education providers seeking to have their education and training programs accredited by the ADC have been required to demonstrate that the program enables students to achieve the required professional competencies.'*	Competency domains 4 and 5 include generic and specific competencies relevant to each specialty area. Specific competencies include those related to the principles and application of pharmacology and/or management of orofacial pain for the specialties of: Dento-maxillofacial radiology, endodontics, oral and maxillofacial surgery, oral medicine, oral surgery, orthodontics, paediatric dentistry, periodontics, prosthodontics, special needs dentistry. Domain 4 also includes specific competencies relating to the use of sedation and anaesthetic techniques for the specialties of oral and maxillofacial surgery, oral surgery, paediatric dentistry, special needs dentistry.	(g) pharmaceutical agents relevant to conscious sedation, the various routes of administration, reversal and the management of side effects **Domain 5 Patient care** A graduate endorsed conscious sedation dentist is expected to be competent, relevant to conscious sedation, in: (e) administering advanced forms of local anaesthesia (f) administering pharmaceutical agents used across all routes of administration including management of side effects

*The competencies define scientific and clinical knowledge requirements for all dental practitioners including dentists, oral health therapists, dental therapists, dental hygienists and dental prosthetists.

**The competencies define scientific and clinical knowledge requirements for all dental specialties including dento-maxillofacial radiology, endodontics, forensic odontology, oral and maxillofacial surgery, oral medicine, oral pathology, oral surgery, orthodontics, paediatric dentistry, periodontics, prosthodontics, public health dentistry and special needs dentistry.

Midwives

(a) Midwife prescriber programs

Standards	The Australian Nursing & Midwifery Accreditation Council Accreditation Standards for Programs Leading to Endorsement for Scheduled Medicines for Midwives (2015)[165]

Definition of Prescribing

This document includes a glossary which defines the MBS and PBS but not prescribing. ANMAC Provides a separate glossary[171] which includes a number of definitions relevant to prescribing, including: Pharmaceutical Benefits Scheme (PBS), pharmacodynamics, pharmacokinetics, pharmacotherapeutics, prescribing.

Accreditation Standards

The standards require programs to demonstrate a foundation in quality use of medicines (QUM), evidence-based, contemporary prescribing practices and practical prescribing experiences that comprehensively addresses the NPS MedicineWise Prescribing Competencies Framework.[1] Students are required to undertake a summative assessment of performance against the National Prescribing Competencies Framework.

Eight standards describe program expectations regarding: governance, the curriculum conceptual framework, program development and structure, program content, student assessment, students, resources and quality improvement and risk management.

Table A13 Australian Nursing and Midwifery Accreditation Council accreditation standards for programs leading to endorsement for scheduled medicines for midwives standards relevant to prescribing medicines [165]

Accreditation Standard	Criteria
1 - Governance	1.5 Terms of reference for the relevant program advisory committees demonstrating partnerships with key stakeholders, including representatives with specific **expertise in scheduled medicines** and Aboriginal and Torres Strait Islander health professionals and committees.
2 - Curriculum conceptual framework	The program must demonstrate evidence of: 2.1 A clearly documented and fully explained conceptual framework for the program, including a curriculum underpinned by: a. quality use of medicines and safe prescribing

Accreditation Standard	Criteria
	b. legal principles and legislative framework relevant to each state and territory 2.3 A program that is congruent with contemporary and evidence-based approaches to prescribing in midwifery practice and education and underpinned by principles of safety, quality and risk management.
3 – Program development and structure	The program provider must demonstrate evidence of: 3.1 Consultative and collaborative approaches to curriculum design and program organisation between academic staff, those working in midwifery practice, those with pharmacology and medication management expertise, students, consumers and other key stakeholders, including Aboriginal and Torres Strait Islander health professionals. 3.2 Contemporary midwifery, prescribing and education practice in the development and design of curriculum. 3.3 A map of subjects against the NPS: National Prescribing Competency Framework which clearly identifies the links between learning outcomes, assessments and required graduate competencies.
4 – Program content	The program provider must demonstrate evidence of: 4.1 A comprehensive curriculum document, based on the conceptual framework that includes: c. links between subject objectives, learning outcomes, learning assessments and the National Prescribing Competency Framework in the midwifery context e. a prescribing in midwifery practice experience plan. 4.2 **The program's central focus is on contemporary prescribing in midwifery practice**. In addition to the content required to meet the attainment of the NPS: National Prescribing Competency Framework, this includes: a. comprehensive understanding of the relevant State and Territory Drugs and Poisons legislation and Pharmaceutical Benefits Scheme requirements b. professional relationships and referral, including establishing collaborative arrangements with General Practitioners and Obstetricians and/or health services c. comprehensive understanding of and ability to work with the Medical Benefits Schedule and Pharmaceutical Benefits Scheme.

Accreditation Standard	Criteria
5 – Student assessment	The program provider must demonstrate evidence of: 5.5 Assessment approaches used to evaluate competence in the essential knowledge, skills and behaviours required for professional prescribing practice. 5.6 Appropriate assessments used in professional practice experience to evaluate students abilities to meet the National Prescribing Competency Framework within midwifery practice. 5.7 Ultimate accountability mechanisms in place for assessing students on their prescribing practice experience. 5.11 Summative assessments of student achievement of competence against the current National Prescribing Competency Framework within midwifery practice, conducted by a health professional who is appropriately qualified, prepared and able to demonstrate current experience in assessing prescribing practice in an Australian midwifery context before program completion. 5.12 Clearly articulated models of supervision, support, facilitation and assessment being in place to enable students to achieve required learning outcomes and current National Prescribing Competency Framework within midwifery practice.
6 – Students	The program provider must demonstrate evidence of: 6.1 Applicants being informed of the following prior to accepting an offer of enrolment: d. specific requirements for right of entry to health services for prescribing in midwifery practice experience placements, including fitness to practice, immunisation and criminal history. 6.6 Students having equal opportunity to attain the National Prescribing Competency Framework in midwifery practice without any influence of the program mode of delivery or program location.

Nurse Practitioners

Standards	The Australian Nursing & Midwifery Accreditation Council Nurse Practitioner Accreditation Standards (2015)[175] *(currently under review)*

	Nursing and Midwifery Board of Australia Nurse Practitioner Standards for Practice (2021)[169]

Definition of Prescribing

This document includes a glossary which defines the MBS and PBS but not prescribing. ANMAC Provides a separate glossary[171] which includes a number of definitions relevant to prescribing, including: Pharmaceutical Benefits Scheme (PBS), pharmacodynamics, pharmacokinetics, pharmacotherapeutics, prescribing.

Accreditation Standards

Table A14 Australian Nursing and Midwifery Accreditation Council nurse practitioner accreditation standards relevant to prescribing medicines [175]

Accreditation Standard	Criteria
3 – Program development and structure	The program provider demonstrates: 3.2 A map of subjects against the Nurse Practitioner Standards for Practice* that clearly identifies the links between learning outcomes, assessments and required graduate standards for practice. 3.3 A map of subjects against the National Prescribing Competencies Framework that clearly identifies the links between learning outcomes, assessments and required graduate competencies. 3.6 A minimum of 300 hours of supernumerary integrated professional practice incorporated in the program that provides exposure to a range of health care experiences relevant to the students' learning needs and enables students' achievements of the Nurse Practitioner Standards for Practice*
4 – Program content	The program provider demonstrates: 4.1 A comprehensive curriculum document, based on the framework discussed in Standard 2 that includes: d. an integrated professional practice plan demonstrating opportunities to meet the Nurse Practitioner Standards for Practice* 4.3 Program content includes but is not limited to: d. therapeutic practice approaches grounded in a nursing model of care and that incorporate quality use of medicines
5 – Student Assessment	The program provider demonstrates:

Accreditation Standard	Criteria
	5.6 A range of instruments, validated where possible, are used in integrated professional practice assessment to evaluate student knowledge, skills, behaviours and capacity to meet the Nurse Practitioner Standards for Practice* 5.11 Comprehensive summative assessment of the student's achievement of the **Nurse Practitioner Standards for Practice** on program completion. This includes a comprehensive summative clinical viva voce within the student's nominated scope of practice, by suitably qualified members of the multidisciplinary team, to demonstrate the achievement of Australian Qualifications Framework Level 9 graduate descriptors.
6 - Students	The program provider demonstrates: 6.6 All students have equal opportunity to meet the Nurse Practitioner Standards for Practice*. The mode or location of program delivery should not influence this opportunity.
7 - Resources	The program provider demonstrates: 7.8 Staff teaching and assessing nursing practitioner specific subjects, including those with pharmacology, advanced health assessment and diagnostics (pathology and medical imaging) content, have relevant clinical and academic qualifications and experience.
8 – Management of integrated professional practice	The program provider demonstrates: 8.5 Each student is provided with sufficient integrated professional practice to support the meeting of the Nurse Practitioner Standards for Practice*. 8.9 Nominated professionals in the student's clinical and professional support team undertake assessment of the student against the Nurse Practitioner Standards for Practice* within the context of integrated professional practice experience.

*Nurse Practitioner Standards for Practice specifically detail prescriber expectations.

Nurse Practitioner Standards for Practice (2021)[169]

The standards provide the minimum standards of practice applicable across all practice settings and levels of experience. Standard 3 specifically describes practice expectations relevant to prescribing medicines.

Standard 2: Plans care and engages others

Statement 2.3: NPs consider quality use of medicines and therapeutic interventions using their comprehensive knowledge when planning care

The NP:

2.3.1 develops an individual plan of care and communicates this to appropriate members of the healthcare team and relevant agencies

2.3.2 exhibits a comprehensive knowledge of pharmacology and pharmacokinetics related to NP scope of practice

2.3.3 works in partnership with the person receiving care to determine therapeutic goals and options

2.3.4 verifies the suitability of evidence-based treatment options including medicines, in regard to commencing, maintaining/titrating or ceasing interventions, and

2.3.5 demonstrates accountability in considering access, cost and clinical efficacy when planning treatment.

Standard 3: Prescribes and implements therapeutic interventions

Statement 3.1: NPs use professional knowledge when prescribing indicated non-pharmacological and pharmacological interventions

The NP:

3.1.2 safely prescribes therapeutic interventions based on accurate knowledge of the characteristics and concurrent therapies of the person receiving care

3.1.3 demonstrates professional integrity and ethical conduct in relation to therapeutic product manufacturers and pharmaceutical organisations

3.1.4 safely and effectively performs evidence-informed invasive/non-invasive interventions for the clinical management and/or prevention of illness, disease, injuries, disorders or conditions, and

3.1.5 interprets and follows-up the findings of screening and diagnostic investigations in an appropriate time frame during the implementation of care.

Statement 3.2: NPs manage episodes of care, establishing and maintaining respectful relationships with people at the centre of care

The NP:

3.2.2 advises the person receiving care on therapeutic interventions including benefits, potential side effects, unexpected effects, interactions, importance of compliance and recommended follow-up

3.2.4 discloses the facts of adverse events to the person receiving care and other health professionals; mitigates harm, and reports adverse events to appropriate authorities in keeping with relevant legislation and organisational policy.

Optometrists

Standards and Competencies	Accreditation Standards and Evidence Guide for Entry-Level Optometry Programs (2023)[172]
	Optometry Australia entry-level competency standards for optometry (2014)[170] *(currently under review)*

(a) Entry-level programs

Definition of Prescribing

Not included however the term "Therapeutic Practice" is defined as "The practice of optometry that includes the prescribing and possession of certain controlled drugs and poisons."[172]

Accreditation Standards

Table A15 Optometry Council of Australian and New Zealand accreditation standards and evidence guide for entry-level optometry programs relevant to prescribing medicines [172]

Accreditation Standard	Criteria
Domain 4 – Program of study	4.2 Program learning outcomes address all the professional competencies endorsed by OCANZ.
Guidance provided to meet this standard suggests programs should demonstrate they provide adequate opportunity for students to engage with patients across a wide range of presentations including therapeutics and should develop the competencies required to prescribe medicines as articulated in the NPS MedicineWise Prescribing Competencies Framework.	
Domain 6 – Program learning outcomes & assessment	6.1 Program learning outcomes are specified and mapped to the **required professional competencies** and requirements for registration to practise. 6.3 On completion of the program, students have demonstrated all specified learning outcomes.

Table A16 Optometry Australia entry-level competency standards for optometry (2014) relevant to prescribing medicines [170]

Element	Performance Criteria
Unit 1: Professional Responsibilities	
1.3 Practises independently	1.3.1 Professional independence in optometric decision-making and conduct is maintained. *[suggested indicators including prescribing decisions]*
1.5 Communicates appropriate advice and information	1.5.1 Information is clearly communicated to patients, staff and other professionals. *[suggested indicators include prescription as a form of communication]* 1.5.3 Significant or unusual clinical presentations can be recognised and findings communicated to other practitioners involved in the patient's care or to government bodies. *[suggested indicators include the side effects of drugs]*
1.8 Understands the legal and other obligations involved in optometric practice	1.8.1 Relevant legislation, common law obligations relevant to practice and Australian Standards are understood and implemented. *[suggested indictors include providing prescriptions and storage of prescription stationery securely]*
Unit 4: Diagnosis and Management	
4.9 Prescribes pharmacological and other regimens to treat ocular disease and injury	4.9.1 Pharmacological agents are selected and recommended. Example: *Ability to make prescribing decisions on the basis of the best available research evidence together with clinical expertise and the patient's preferences. [suggested indicator: ability to make prescribing decisions on the basis of the best available research evidence together with clinical expertise and the patient's preferences]*
	4.9.2 An ocular therapeutic prescription is issued in a manner that allows accurate supply of the agent
	4.9.3 The effect of ocular therapeutic treatment is monitored and appropriate changes in management recommended
	4.9.4 Patients are instructed on the correct use, administration, storage and disposal of pharmaceutical agents
	4.9.5 Patients are instructed about precautionary procedures and non-pharmacological and palliative management
	4.9.6 Patients are instructed in the avoidance of cross-infection
	4.9.8 The patient's risk factors for poor adherence to instructions regarding the use of therapeutic medications is assessed and addressed

Element	Performance Criteria
	4.9.9 Therapeutic medications are supplied
4.11 Refers patients and receives patient referrals	4.11.1 The need for referral to other professionals or rehabilitative services for assessment and/or treatment is recognised, discussed with the patient and a suitable professional or service is recommended. *[suggested indicator: understanding of when to refer the patient where oral medicines are preferred]*
Unit 5: Health Information Management	
5.1 Records patient information and data in a legible, secure, accessible, permanent and unambiguous manner	5.1.1 All relevant information pertaining to the patient is recorded promptly in a format which is understandable and useable by any optometrist and his/her colleagues. *[suggested indicator includes therapeutic prescriptions]*

Note: these standards are currently under review

(b) Prescriber programs for registered optometrists

For optometrists who completed entry-level education and training prior to the inclusion of curriculum content that prepared graduates to prescribe medicines, postgraduate ocular therapeutics programs are available. These programs offer additional education and training specifically designed to prepare registered optometrists to achieve endorsement to prescribe scheduled medicines. Ocular therapeutics programs are accredited by the Optometry Council of Australia and New Zealand.

Standards	Optometry Council of Australia and New Zealand (OCANZ) accreditation standards and evidence guide for programs of study in ocular therapeutics (2018)[173]

Table A17 Optometry Council of Australian and New Zealand accreditation standards and evidence guide for programs of study in ocular therapeutics (2018) standards relevant to prescribing [173]

Accreditation Standard	Criteria
1 Public safety	1.3 Students achieve the relevant foundation of competencies in ocular therapeutics before providing therapeutic management of ocular diseases as part of the program.

Accreditation Standard	Criteria
2 Academic governance and quality assurance	2.3 There is relevant external input to the design and management of the program, including from representatives of the optometry profession who have expertise in ocular therapeutics. 2.4 Mechanisms exist for responding within the curriculum to contemporary developments in health professional education and practice, including ocular therapeutics in particular.
3 Program of study	3.1 A coherent educational philosophy informs the design and delivery of the program of study, which is publicly available and encompasses both the conceptual bases of ocular therapeutics and the development of practical skills.
	3.2 Program learning outcomes align with and address all of the professional competencies endorsed by OCANZ that are relevant to ocular therapeutics.*
	3.3 The scope of the program encompasses a range of topics sufficient to achieve the expected learning outcomes of the program including those set out in Standard 5.
	3.4 The quality, quantity and diversity of clinical training are sufficient to produce a graduate competent to practise ocular therapeutics across a range of settings.
	3.5 Learning and teaching methods are intentionally designed and used to enable students to achieve the required learning outcomes.
Guidance to meet this standard indicates that OCANZ expects the program to be consistent with the requirements of the NPS MedicineWise Prescribing Competencies Framework.	
5 Assessment	5.2 Scope of assessment covers all learning outcomes relevant to the competencies for ocular therapeutics*.
	5.6 All learning outcomes are mapped to the required competencies*, and are assessed.

*Professional competencies relevant to ocular therapeutics described in Table A16.

Podiatrists

(a) Entry-level programs

Standards and Capabilities	Accreditation Standards: Entry-level podiatry programs (2022)[179]
	AHPRA Podiatry Board Professional capabilities for podiatrists (2022)[174]

Definition of Prescribing

The glossary in the accreditation standards includes a definition for medicines (and/or pharmaceutical products), noting that the term includes prescription, non-prescription, over-the-counter and complementary medicines (herbs, vitamins, minerals, nutritional supplements, homeopathic medicines, bush and traditional medicines).[179]

The professional capabilities document includes the Australian definition of prescribing defined by the Health Professionals Prescribing Pathway project [2] noting that for the purposes of the document the definition 'includes the use, supply, administration and prescription of pharmaceutical products.' [page 23].[174]

Accreditation Standards

Accreditation standards for **entry-level programs** require education providers to map learning outcomes and assessments to professional capabilities, defined as *"the knowledge, skills and professional attributes needed to safely and competently practise as a podiatrist in Australia." [page 4].* Where the program prepares graduates for endorsement for scheduled medicines via Pathway A, education providers must demonstrate that learning outcomes and assessments map to the NPS MedicineWise prescribing competencies framework.[1]

Table A18 Podiatry Accreditation Committee accreditation standards: entry-level podiatry programs relevant to prescribing medicines [179]

Accreditation Standard	Criteria
1 Assuring safe practice	1.3 Students are required to achieve relevant capabilities before each period of work-integrated learning. Explanatory notes for this standard provide the example that 'capabilities required for the safe and effective use of medicines are achieved before students use medicines as part of providing patient care.'
3 Program design, implementation and resourcing	3.3 Unit and/or subject learning outcomes in the program address all the professional capabilities for podiatrists. Overview indicates may include capabilities required to prescribe medicines. 3.11 The quality, quantity, duration and diversity of student experience during work-integrated learning in the program is sufficient to produce a graduate who has demonstrated the knowledge, skills and professional attributes to safely and competently practise across a broad range of podiatry practice settings. This includes using pharmaceutical products for the treatment of podiatric conditions.

Accreditation Standard	Criteria
	Explanatory notes indicated that education providers must explain how practical experiences will ensure graduates achieve the required professional capabilities, including those required to safety and effectively use pharmaceutical products.
5 Assessment	5.1 All the professional capabilities for podiatrists and unit and/or subject learning outcomes are mapped to assessment tasks in the program.

Table A19 Professional capabilities for podiatrists relevant to prescribing medicines [174]

Key Professional Capability	Enabling Component
Domain 1: Podiatrist	
1.1 Plan and perform an efficient, effective, culturally responsive and person-centred podiatry assessment to develop a diagnosis	e. Get relevant information from the patient about their medical, clinical and pharmacological history, and their social and cultural context g. Plan an assessment drawing on applied knowledge of anatomy, physiology, pathology, pharmacology, biomechanics and other core biomedical sciences relevant to podiatry
1.3 Use pharmaceutical products safely and effectively within own scope of practice	• Understand and comply with relevant Commonwealth, state and territory legislative requirements and guidelines relating to the safe and effective use of pharmaceutical products, including provisions relating to the: – secure storage, labelling, record-keeping, disposal, loss or theft of pharmaceutical products; – reporting of adverse events related to pharmaceutical products; and – advertising of therapeutic goods including scheduled medicines • Apply knowledge of pharmaceutical products used for podiatric conditions • Use contemporary resources to support the best evidence-based use of pharmaceutical products in podiatry practice, including antimicrobial stewardship • Make prescribing recommendations for the treatment of podiatric conditions safely and effectively, drawing on knowledge of: – pharmacokinetics and pharmacodynamics

Key Professional Capability	Enabling Component
	– the risks, precautions and contraindications associated with the use of pharmaceutical products – the risks, precautions and contraindications associated with the interactions between pharmaceutical products – the risk of pharmaceutical errors and adverse events and implement strategies to reduce these occurring – the patient's socio-cultural and socio-economic background, their preferences, financial position and current pathology – the cost and affordability of pharmaceutical products for the patient – the patient's preferences and goals for treatment • Implement strategies to address influences that may bias prescribing decisions • Give clear instructions to patients who will self-administer pharmaceutical products; check the patient's understanding of the instructions given and their ability to self- administer medications, including advice on appropriate monitoring mechanisms • Actively monitor the effects of pharmaceutical products and manage any adverse reactions • Give clear written and/or verbal communication to other relevant health practitioners regarding the use of pharmaceutical products. • Record and give a complete and accurate prescription that is legible and complies with all legal requirements
Domain 2: Professional and ethical practitioner	
2.1 Practice in an ethical and professional manner, consistent with relevant legislation and regulatory requirements	Comply with legal, regulatory and professional requirements, responsibilities and guidelines, including but not limited to: • Safe and effective use of pharmaceutical products
2.4 Advocate on behalf of the patient when appropriate	d. Advocate for the patient's equitable access to effective treatments, including medicines where appropriate, with members of the patient's healthcare team to address the patient's needs as a whole person, acknowledging that access broadly includes availability, affordability, acceptability and appropriateness
Domain 3: Communicator and collaborator	

Key Professional Capability	Enabling Component
3.1 Communicate clearly, effectively, empathetically and appropriately with the patient and their family and carers	e. Give clear verbal and written treatment instructions to the patient and/or their family or carers, including details of when and how to use pharmaceutical products
Domain 4: Lifelong learner	
4.2 Identify ongoing professional learning needs and opportunities	b. Critically reflect on personal strengths and limitations to identify learning needs to maintain currency of professional practice, including in relation to the safe and effective use of medicines
Domain 5: Quality and risk manager	
5.1 Practise podiatry safely	a. Apply principles of quality assurance and quality improvement to enhance the safety and quality of practice, including the safe and effective use of pharmaceutical products and medical devices, in accordance with legislation and regulatory requirements.
5.2 Protect and enhance patient safety	e. Contribute to the improvement of policies and procedures for safe practice in the workplace, including the safe and effective use of pharmaceutical products

(b) Podiatric surgery programs

Standards and Capabilities	Podiatry Accreditation Committee Accreditation standards: Podiatric surgery programs[180]
	Podiatry Board of Australia Professional capabilities for podiatric surgeons[181]

Separate accreditation standards apply to podiatric surgery programs. Pre-requisite to completing a podiatric surgery program is the achievement of general registration as a podiatrist and a minimum of two years' experience.[182]

Definition of Prescribing

The accreditation standards for podiatric surgery programs includes a definition of medicines (and/or pharmaceutical products), noting that the term includes prescription, non-prescription, over-the-counter and complementary medicines (herbs, vitamins, minerals, nutritional supplements, homeopathic medicines, bush and traditional medicines).[180]

The professional capabilities includes the Australian definition of prescribing defined by the Health Professionals Prescribing Pathway project[2] noting that for the purposes of the document the definition 'includes the use, supply, administration and prescription of pharmaceutical products' [page 25] while acknowledging jurisdictional legislative differences.[181]

Accreditation Standards

Accreditation standards applicable to podiatric surgery programs indicate that all programs must demonstrate student achievement of all professional capabilities for podiatric surgeons. Where podiatric surgery programs also include content that qualifies the graduate for an endorsement for scheduled medicines, the program is required to demonstrate that learning outcomes and assessments align with the NPS MedicineWise Prescribing Competencies Framework.[180]

Table A20 Podiatry Accreditation Committee accreditation standards: Podiatric surgery programs relevant to prescribing medicines [180]

Accreditation Standard	Criteria
1 – Assuring safe practice	1.3 Students need to achieve relevant capabilities before each period of work-integrated learning Explanatory notes indicate that capabilities needed for the safe and effective use of medicines must be achieved prior to students use medicines in the provision of patient care
3 - Program design, implementation and resourcing	3.3 Learning outcomes in the program address all the professional capabilities for podiatric surgeons
	3.12 The quality, quantity, duration and diversity of student experience during work-integrated learning in the program is sufficient to produce a graduate who has demonstrated the professional capabilities needed to safely and competently practice podiatric surgery, including using pharmaceutical products for the treatment of podiatric conditions
5 – Assessment	5.1 All the professional capabilities for podiatric surgeons and unit and/or subject learning outcomes are mapped to assessment tasks in the program

Key capabilities for podiatric surgeons relevant to prescribing medicines are similar to those outlined in Table A19 above for podiatrists.

(c) Programs that provide podiatrist prescriber education and training

(i) Prescriber education and training included in entry-level program

Accreditation standards for **programs that deliver content designed to specifically address the requirements for endorsement for scheduled medicines** for registered podiatrists and podiatric surgeons [183] include the same standards as for entry-level programs with specific requirements included in relevant criteria to ensure prescribing specificity. These standards apply to those programs that deliver graduates who are eligible to apply for endorsement under Pathway A.

Specific differences include:

Standard 1 Assuring safe practice

Criterion 1.4 Specifies that formal arrangements are implemented that 'ensure practitioners supervising students have experience in the education and supervision of work-integrated learning.' This could be:

- A podiatrist or podiatric surgeon whose registration is endorsed for scheduled medicines, or
- A practitioner who holds registration in another profession and whose scope of practice includes prescribing and administering scheduled medicines such as a registered medical practitioner or a registered nurse practitioner.

Standard 2 Academic governance and quality assurance of the program

Criterion 2.2 The podiatry scheduled medicines program has been approved by the education provider's relevant board or committee

Criterion 2.9 Discusses the need for formal mechanisms to be included in the program that respond to contemporary developments in *podiatric prescribing* within the curriculum

Standard 3 Education design, implementation and resourcing

Criterion 3.3 Learning outcomes address the relevant professional capabilities for podiatrists and podiatric surgeons required for endorsement of registration through Pathway A.

Expected information to support this includes mapping of learning outcomes to all professional capabilities required for endorsement.

Criterion 3.6 Learning outcomes and assessment specifically reference the relevant national safety and quality standards, with *emphasis on medication safety*

Criterion 3.9 Legislative and regulatory requirements *relevant to ESM* are taught and their application to practice is assessed during periods of work-integrated learning in the program

Criterion 3.11 The quality, quantity, duration and diversity of student experiences during work-integrated learning in the program is sufficient to produce a graduate who has demonstrated the knowledge, skills and professional attributes to safely and competently *prescribe pharmaceutical products for the treatment of podiatric conditions.*

Criterion 3.14 Each program has the level and range of facilities and equipment to sustain the quality and scope of education needed for students to achieve all the professional capabilities required *for endorsement of registration for scheduled medicines.*

Standard 5 Assessment

Criterion 5.1 All relevant professional capabilities *for endorsement of registration in relation to scheduled medicines* and learning outcomes are mapped to assessment tasks.

(ii) Prescriber programs for registered podiatrists and podiatric surgeons

Accreditation standards for **post-graduate programs** designed for registered podiatrists and podiatric surgeons seeking endorsement for scheduled medicines via Pathway B include standards described under the same headings as for all accreditation standards, with a specific focus on the development of prescribing capabilities. Programs must demonstrate alignment with the NPS MedicineWise Prescribing Competencies Framework[1] and professional the professional capabilities referred above (Table A19).

Table A21 Accreditation standards for podiatric therapeutic programs for registered podiatrists and podiatric surgeons relevant to prescribing medicines [184]

Accreditation Standard	Criteria
2 – Academic governance and quality assurance of the program	2.8 Formal mechanisms exist and are applied with the aim of anticipating and responding to contemporary developments in podiatric prescribing and the education of health practitioners, within the curriculum
3- Program design, implementation and resourcing	3.3 Unit and/or subject learning outcomes address theoretical aspects of the relevant professional capabilities for podiatrists or podiatric surgeons
	3.4 Unit and/or subject learning outcomes address contemporary principles of interprofessional education and collaborative practice in the context of prescribing by podiatrists and podiatric surgeons whose registration is endorsed for scheduled medicines
	3.5 Unit and/or subject learning outcomes and assessment specifically reference the relevant national safety and quality standards, with a particular emphasis on medication safety Explanatory notes for this standard indicate a requirement for programs to demonstrate reference to national safety and quality standards with particular emphasis on medication safety e.g., the Australian Commission on Safety and Quality in Health Care
	3.7 Legislative and regulatory requirements relevant to podiatric therapeutics are taught and assessed

Accreditation Standard	Criteria
5 – Assessment	5.1 The relevant professional capabilities for endorsement of registration for scheduled medicines and unit and/or subject learning outcomes are mapped to assessment tasks

Pharmacists

Pharmacists are currently authorised to prescribe unscheduled medicines and those categorised in Schedules 2 and 3.[158]

Standards	APC Accreditation Standards for Pharmacy Programs [185]
	APC Accreditation Standards for Pharmacy Programs Performance Outcomes Framework [186]

Definition of Prescribing

Not included

Accreditation Standards

Table A22 APC accreditation standards for pharmacy programs relevant to prescribing [185]

Standard	Criteria
1 – Safe and socially accountable practice	1.5 Graduates of the program have demonstrated appropriate understanding of their legal, ethical and professional responsibilities, awareness of relevant processes for managing concerns in relation to their practice and/or the practice of others, and recognition of mechanisms for familiarising themselves with changes in requirements Notes reference drugs and poisons legislation, professional competency standards
3 - Program	3.2 Program design, content, delivery and assessment reflect contemporary evidence- based practice in pharmacy, health and education, and are designed to facilitate the achievement and demonstration by students/ interns of the **required performance outcomes** at an appropriate pace over a sufficient period of time. Emerging developments and scopes of practice relevant to entry-level practice, and new technologies are incorporated into the program (including WIL) in a timely manner to ensure that the program remains fit-for-purpose.

Standard	Criteria
4 - Student/intern experience	4.3 The unit delivering the program ensures that students/interns are able to access relevant resources and support systems in a timely manner to facilitate achievement of the required performance outcomes.
5 – Outcomes and assessment	5.1 The scope of assessment covers all learning and performance outcomes required to ensure graduates are competent to practise safely, legally, professionally and ethically as a member of an interprofessional health care team

Table A23 APC Performance Outcomes Framework outcomes relevant to prescribing [186]

Domain	Performance Outcome (at the point of registration)
3 - Professional Expertise	3.2 making and prioritising recommendations to manage health, medical and medication needs of patients, including both pharmacological and non-pharmacological strategies, based on the Quality Use of Medicines Framework and the best available evidence
	3.3 prescribing medications in accordance with current jurisdiction-specific legislation, scope of practice and PharmBA guidelines.
	3.7 assessing current health, medical and medication histories and profiles of patients
	3.8 formulating and implementing health, medical and medication management plans in collaboration with patients, carers and other health team members
	3.9 formulating and implementing appropriate monitoring of the outcomes of health, medical and medication management plans and adjusting them where appropriate in collaboration with patients, carers and other health team members
	3.13 administering injectable formulations in accordance with current jurisdiction-specific legislation, scope of practice and PharmBA Guidelines
	3.18 assessing ambulatory conditions and providing appropriate management approaches, including pharmacological, non-pharmacological and referral options where appropriate

Note also that all public and private hospitals, day procedure services and public dental practices are required to be accredited to the National Safety and Quality Health Service (NSQHS) Standards, which include extensive standards regarding prescribing and medication safety. [187]