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HEALTH

NSW Ministry of Health

Pharmacy – Horizons Scanning and Scenario Generation

July 2015

(Including addendum with validation of findings completed July 2017)

+ TABLE OF CONTENTS

1   Executive Summary

THE PURPOSE OF THIS DOCUMENT IS TO OUTLINE THE METHODOLOGY, APPROACH AND THEMES RAISED BY THE LITERATURE AND PHARMACY STAKEHOLDERS TO INFORM THE WORKFORCE MODELLING PHASE (STAGE C IN Figure 2 BELOW) OF THE NSW MINISTRY OF HEALTH'S WORKFORCE PLANNING METHODOLOGY. IT SHOULD BE NOTED THAT THE VIEWS EXPRESSED IN THE REPORT ARE NOT NECESSARILY THOSE OF THE NSW MINISTRY OF HEALTH.

1.1   Project background

The Selected Allied Health Professions – Horizon Scan 2015 project is driven by the Health Professionals Workforce Plan 2012-22, which sets out the framework for addressing the workforce implications of increasing demand for health services in NSW. Given this increasing demand for health services, the Plan establishes that simply increasing staffing without considering changing workforce practices and introducing more efficient and effective models of care is unsustainable. As part of the Plan the Workforce Planning and Development Branch (WPD), NSW Ministry of Health is responsible for developing and modelling projections for the Allied Health workforce in NSW. The Allied Health workforce is a diverse group of professions and includes pharmacy.

1.2   About this project

The Horizon Scanning project represents an opportunity for stakeholders within the pharmacy profession across NSW Health to participate in the development of short, medium and long-term priorities for their particular field. With an emphasis on integrated and patient centered care (NSW Health priorities), these priorities have been developed through consideration of a number of system-wide drivers. These include:

- The need to shift the provision of service from an institutional focus, towards a patient-centric model

- An increasing focus on Activity-Based Funding, encouraging services to consider more efficient models of care, often delivered in the home or in community based settings

- An increasing use of eHealth, which also demands changes in work practice as a result of increased access to electronic records, use of technology, mobile devices and electronic decision support

- An emphasis on collaborative, multidisciplinary teams across care settings and balancing health profession specialisation with generalisation to address the increased demand for care, particularly amongst patients with chronic and complex conditions

- A need to consider the geographic distribution of the workforce to align with changing population demographics and health needs.

The results of this research form part of the Horizon Scanning phase for the NSW Ministry of Health to support strategic workforce planning for the pharmacy workforce. The scope of this paper aligns with the Information gathering and Issues and Drivers Analysis stages as set out in the Ministry of Health's workforce planning methodology.

1.3   Methodology

The methodology employed to develop the Horizon Scan included: a comprehensive search of peer-reviewed, organisational and grey literature; a workshop with senior pharmacists and technicians from a range of Local Health Districts (LHDs); and, 1:1 interviews with pharmacists. The workshop and interviews were designed to further explore and prioritise key demand and

supply drivers for the pharmacy workforce in NSW, and to better understand factors impacting future delivery of pharmacy services (see Appendix B for list of stakeholders).

1.4   Scope of practice

The scope of practice for pharmacy describes the professional role that pharmacists perform and the services they provide which is usually determined by the setting they work in. The scope of practice for a pharmacist can vary in terms of specificity. A generalist pharmacist for example, provides services to a wide variety of consumers with a wide variety of medical conditions. However the professional focus of other pharmacists may be more centred on specific consumer groups or a specific range of medical conditions (Pharmaceutical Society of Australia, 2010a).

Pharmacists play a key role in ensuring continuity of care throughout a client's healthcare journey with other providers. Comprehensive practice guidelines for pharmacists have been developed in partnership with numerous government and professional bodies, and continue to be revised and enhanced (Pharmaceutical Society of Australia, 2010b; The Society of Hospital Pharmacists of Australia, 2013).

Over recent years the scope of practice has changed considerably with an increasing tendency for pharmacists to specialise in certain areas such as management, compounding and medicine management. According to stakeholder feedback these changes generally reflect the increasing complexity of patients, the higher toxicity of medicines and the increasing need for customisation. Another example of scope extension includes the trialling of pharmaceutical prescribing by pharmacists in some jurisdictions. The provision for this extended scope of service is also reflected in the recent Sixth Community Pharmacy Agreement (May, 2015).

1.5   Workforce characteristics

Australian Institute of Health and Welfare data (Australian Institute of Health and Welfare, 2015a) reveals that in 2013:

- There were 27, 972 registered pharmacists in Australia

- The pharmacy workforce composition was gender imbalanced being approximately 60% female and 40%, male

- 36% of the pharmacy workforce was aged 30 years or under and 15% was aged 55 years or older

- Approximately 90% of pharmacists worked in a clinical role, i.e. providing patient care through medicine dispensing and consumer advice

- FTE per 100,000 population decreases in areas that are remote

- The pharmacy FTE per 100,000 in New South Wales was 86.8, below the national average of 90.1.

Figure 1 shows the FTE per 100,000 registered pharmacists in Australia. It can be seen that with 86.8 FTE per 100,000 population, NSW has one of the lowest ratios of pharmacists in Australia (national average, 90.1).

Figure 1: FTE registered pharmacists per 100,000 of population, Australia, 2013
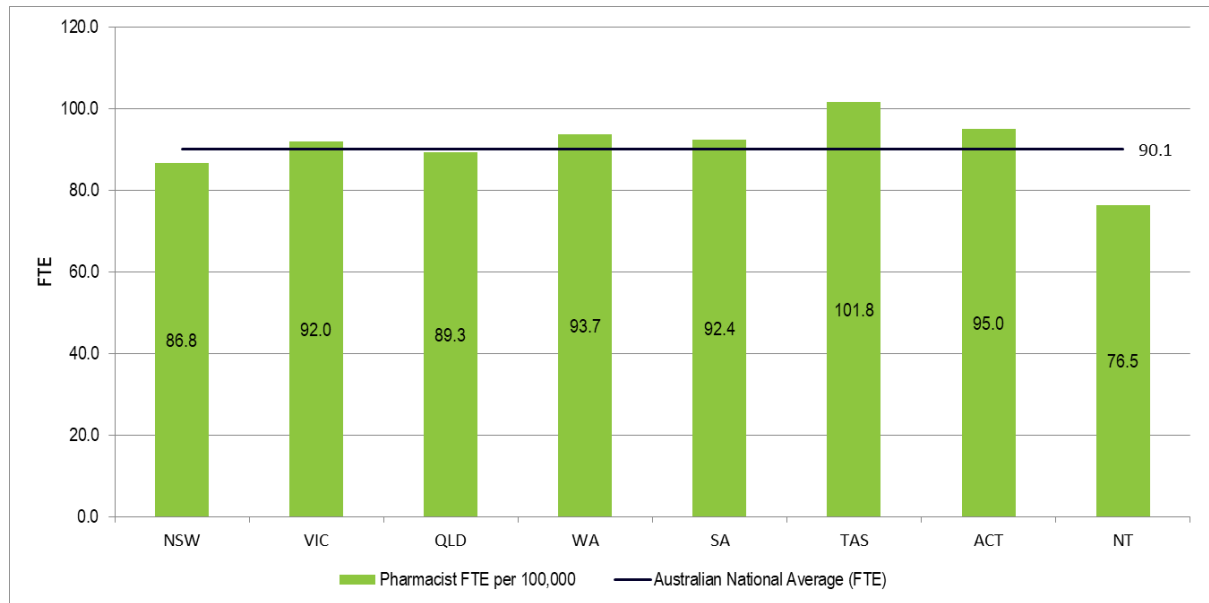
Source: (Australian Institute of Health and Welfare, 2015a)

Approximately nine out of ten employed pharmacists practice in community settings, with only one in ten practicing in hospital settings (The Pharmacy Guild of Australia, N.D.). Unsurprisingly, three-quarters (75%) of pharmacists work in the private sector and 25% in the public sector (Health Workforce Australia, 2014). Registered pharmacists represent approximately 25% of the community-based pharmacy workforce with the remainder comprising assistants and technicians and approximately 55% of the hospital-based pharmacy workforce with the remainder comprising assistants and technicians (The Pharmacy Guild of Australia, N.D.).

Between 15% and 40% of registered pharmacists are either not working in clinical/frontline roles or not working in the profession (Health Workforce Australia, 2014; Mak et al., 2013).

1.6 Demand drivers

Through the literature review, stakeholder interviews and consultation workshop processes, the project team identified a diverse range of drivers impacting on the demand for pharmacy services in both the public and private sectors.

1.6.1 Population ageing, chronic disease and complexity of therapies

Population ageing, the growing incidence of chronic disease and the availability of new medications can lead to increases in the number and complexity of medication interventions which in turn drives demand for pharmacy services (Pharmaceutical Society of Australia, 2013).

Workshop participants contended that the increasing complexity of pharmaceutical responses in health systems is placing higher demands on hospital pharmacists to undertake training & professional development and to also provide relevant training to other health care practitioners.

1.6.2 Clinical Information Technology systems

The increasing prevalence of clinical IT systems was cited by workshop participants as a significant driver of demand on the workload of pharmacy services. Whilst these systems can simplify delivery of services, participants reported that the requirements of testing, managing and maintaining these systems (e.g. database updates) increases the workload of pharmacists

1.6.3 Clinical governance administration requirements

The administrative overhead required to meet clinical governance requirements was considered by workshop participants as a major driver of public pharmacist activity. According to participants, adherence to core national standards, such as those required in the provision of antimicrobial stewardship and the provision of consumer medicines information, medicines lists, and audits are drawing pharmacists into activities which may not have previously required such a large focus of time.

1.6.4 Impacts of other models of care

In health care services, pharmacy is a critical, enabling function which underpins secondary care delivery. Workshop participants contend that when new models of care are introduced (increasing the use of multi-disciplinary teams for example) these changes can generate new demands upon hospital pharmacists.

Stakeholder interviews also indicate that the conduct of medication management review and reconciliation at key transition points in the patient journey, as well as the increasing need to provide education to other clinical groups on medication safety increases demand for pharmacist services. The pharmacists consulted expressed the view that the provision of pharmacy services is often assumed during service redesign/change projects (such as moves towards more outpatient and Hospital in The Home (HITH) based care) when these new models of care actually increase the need for pharmacy input.

1.6.5 Legislation and policy

Input from workshop participants indicates that increasing requirements to meet legislation and policy standards places additional demand on pharmacy services. The increased need for compliance checking of scripts and signatures - checking that the medicine order is written in accordance with legal and local prescribing requirements and restrictions – is one example.

1.6.6 Corporate management responsibilities

The time overhead required to perform corporate management responsibilities is cited as a key constraint on the supply of pharmacy services (particularly for more senior staff) by workshop participants. There is a view among stakeholders that these requirements are creating heavier workloads for which pharmacy health professionals are not appropriately resourced. Examples include: reporting on key performance indicators; increased financial management and associated administration activity; and, development of strategies to improve healthcare efficiencies.

1.7 Supply drivers

The literature review, stakeholder interviews and workshop identified a number of drivers impacting on the supply of pharmacy workforce. Themes identified by participants have been outlined below.

1.7.1 Growth in supply of pharmacy graduates

Growth in pharmacy graduations has more than doubled since 2000 (The Pharmacy Guild of Australia, N.D.). Pharmacy workshop participants report that this increase impacts on the pharmacy workforce supply. As a result, they indicated, graduates often cannot obtain a hospital placement due to limitations of departments' education and training capacity. This same issue impacts pharmacy students who may also find a scarcity of hospital placements available for training purposes.

1.7.2 Funding for positions

Workshop participants noted that a lack of available positions in NSW hospitals constrains pharmacy service delivery and capacity to expand services. Participants argued that additional positions would help relieve current workloads and ensure capacity for quality pharmacy involvement to continue across the full spectrum of hospital pharmacy services.

In addition, the recent Commonwealth funding changes to the Home Medicine Review process - whereby reviews are capped so that accredited pharmacists can only provide services to 20 patients per month – should be considered as a factor that may impact on supply according to stakeholders as it impacts on pharmacists' ability to meet service need.

1.7.3 Constraints in career pathways

According to workshop participants, LHD's interpretation and application of the award impacts negatively on grading of roles, creating misalignment between levels of reward and remuneration with duties performed, which inhibits progression through different grades.

Workshop participants report that they had experienced difficulty when attempting to re-grade pharmacist and technician positions even when their duties meet the criteria of a different grade.

1.7.4 Rural/remote service provision

Attracting workforces to rural and remote parts of NSW is considered by stakeholders to be an important supply challenge for pharmacy. Factors impacting the recruitment and retention of rural pharmacists include perceptions of professional isolation and high workload (Khalil and Leversha, n.d.). In contrast, quality of life, increased professional opportunities, increased affordability and higher-quality professional relationships are regarded as benefits of rural pharmacist practice (Smith et al., 2011).

Stakeholders consulted perceive the emergence of e-health and telehealth technologies will better leverage the workforce and improve equity of access to services, while also reducing the workload of rural hospital pharmacists. Other potential solutions to rural workforce shortages in NSW, cited in interviews by participants, include the provision of allowances based on remoteness and bonding rural scholarships to minimum lengths of service.

1.7.5 Technician role definition variation across NSW

Workshop participants agree that the role of pharmacy technicians varies considerably across NSW hospitals and that the current service and training models are not sufficiently aligned with the breadth of service needs. Information gained from stakeholder interviews suggest that that there is a broader role required for technicians. This includes up skilling technicians to perform non-clinical roles in order to free up pharmacists' time and providing more clinical content in technician training.

1.7.6 Specialist training

Insufficient numbers of advanced pharmacist practitioners is another important driver of supply for the pharmacy workforce according to workshop participants. This in turn can lead to a lack of capacity to provide adequate training to graduates.

1.7.7 Pharmacy FTE Mix

Health workforce participation statistics suggest that the pharmacy workforce is predominately female and young (Australian Institute of Health and Welfare, 2015a). Workshop participants agree that this profile influences a higher demand for part-time and flexible workplaces in order to support family and life choices. Travel and relocation and less family-friendly work conditions may impact on the ability to fill positions, particularly in rural and remote areas.

1.8 Challenges

A number of challenges for the pharmacy workforce were identified through the literature review and stakeholder engagement process and include: workload management; misalignment of service models with service needs; the implications of Activity-Based Funding models; perceived mismatch between the increasing number of graduates and available placements (reported anecdotally by workshop participants); managing high cost drugs; career pathways and retention; working in an increasingly specialist health environment; public image of pharmacy; rural and remote service delivery; and, delivering services to people who are Aboriginal and living in remote communities.

1.9 Opportunities

A number of key opportunities have been identified through the review of literature and consultation with pharmacy stakeholders that might enhance the effectiveness and efficiency of NSW public health pharmacy services. These opportunities can be grouped into two broader areas: career pathways and placements; and, models of care.

1.9.1 Career pathways and placements

- Development of a more specific/diverse career pathways into service management to enhance career progression prospects for new pharmacists

- Improving opportunities for pharmacy specialisation in areas such as oncology, haematology and renal services

- Expanding the role of technicians to free up pharmacists to conduct core clinical activities. This might include: having closer contact with patients; ensuring that patients have sufficient medicines and are using them appropriately; and, performing final accuracy checks

- Standardising national qualifications for pharmacists and technicians to better enable transportability of skills between different Local Health Districts and hospitals

- Reviewing current and exploring the potential of, new incentive programs to encourage more graduate placements in rural areas

- Enhance the dialogue between universities, health policy makers and the pharmacy profession to inform the sustainable growth of pharmacy graduates

- Examining the implications and opportunities for public pharmacy roles and responsibilities in relation to changes in prescribing rights articulated in the sixth Community Pharmacy Agreement Department of Health, 2015.

1.9.2 Models of care

- Privatising the provision of Home Medicine Reviews and Aged Care facility reviews whereby public pharmacists are released from their state role to provide these services, utilising Medicare billing in the capacity as a private practitioner

- Leveraging tele-health to ensure sufficient coverage and efficiency in delivery of pharmacy services in rural and remote areas

- Investigating the potential of recruiting dedicated pharmacists for the purpose of promoting the prescription of generic and lower costs drugs that are demonstrated to yield the same health outcomes as expensive alternatives

- Producing a glossary of pharmacy services which could promote broader understanding of the role and functions of the public pharmacy workforce

- Development of information systems and/or data sources that can: inform staffing allocation; quantify the roles, responsibilities and services provided by the pharmacy workforce; and demonstrate hospital efficiencies due to pharmacy involvement at key stages in the patient journey.

1.10 Opportunities for community pharmacy

Opportunities for community pharmacy, both private and government owned, include:

- Investigating the potential for the scope of pharmacy practice to widen due to changes in prescribing rights

- Utilising care/health pathways to support clinicians to plan patient care through primary, community and secondary health care systems.

2   Introduction

The Selected Allied Health Professions – Horizon Scan 2015 project is driven by the Health Professionals Workforce Plan 2012-22 which sets out the framework for addressing the workforce implications of increasing demand for health services in NSW. The Plan establishes that simply increasing staffing without considering changing workforce practices and introducing more efficient and effective models of care is financially unsustainable. As part of the Plan the Workforce Planning and Development Branch (WPD) is responsible for developing and modelling projections for the Allied Health workforce.

Horizon scanning is a process of gathering data from current literature, including gray literature, and consulting with key stakeholders, such as workforce education providers and policy makers. This project aims to represent an opportunity for stakeholders within the pharmacy profession across the public sector in NSW to participate in the development of a short, medium and long-term priorities for their field. With an emphasis on integrated and patient centered care (NSW Health priorities), this horizon scan has been developed through consideration of a number of system-wide drivers. These include:

- The need to shift the provision of service from an institutional focus, towards a patient-centric model

- An increasing focus on Activity-Based Funding, encouraging services to consider more efficient models of care, often delivered in the home or in community based settings

- An increasing use of eHealth, which also demands changes in work practice as a result of increased access to electronic records, use of technology, mobile devices and electronic decision support

- An emphasis on collaborative, multidisciplinary teams across care settings and balancing health profession specialisation with generalisation to address the increased demand for care, particularly amongst patients with chronic and complex conditions

- A need to consider the geographic distribution of the workforce to align with changing population demographics and health needs (NSW Ministry of Health, n.d.).

Our review of the available data and literature regarding the pharmacy workforce in NSW, Australia and globally enabled us to:

- Articulate the scope of the pharmacist role (across both public and private sector practice)

- Identify key challenges, trends and drivers and opportunities which may impact the pharmacy workforce now or in the future

- Identify examples of how other jurisdictions have considered or addressed these factors in their own health workforce planning initiatives and offer insight to the potential implications for NSW Health organisations

- Where possible, identify potential metrics or benchmarking that might be applied to measure the impact of drivers such as technology, science, policy and costs on the workforce.

The results of this literature review and subsequent research phases form part of the Horizon Scanning phase for the NSW Ministry of Health to support strategic workforce planning for the pharmacy workforce.

Figure 2: Ministry of Health Workforce planning methodology
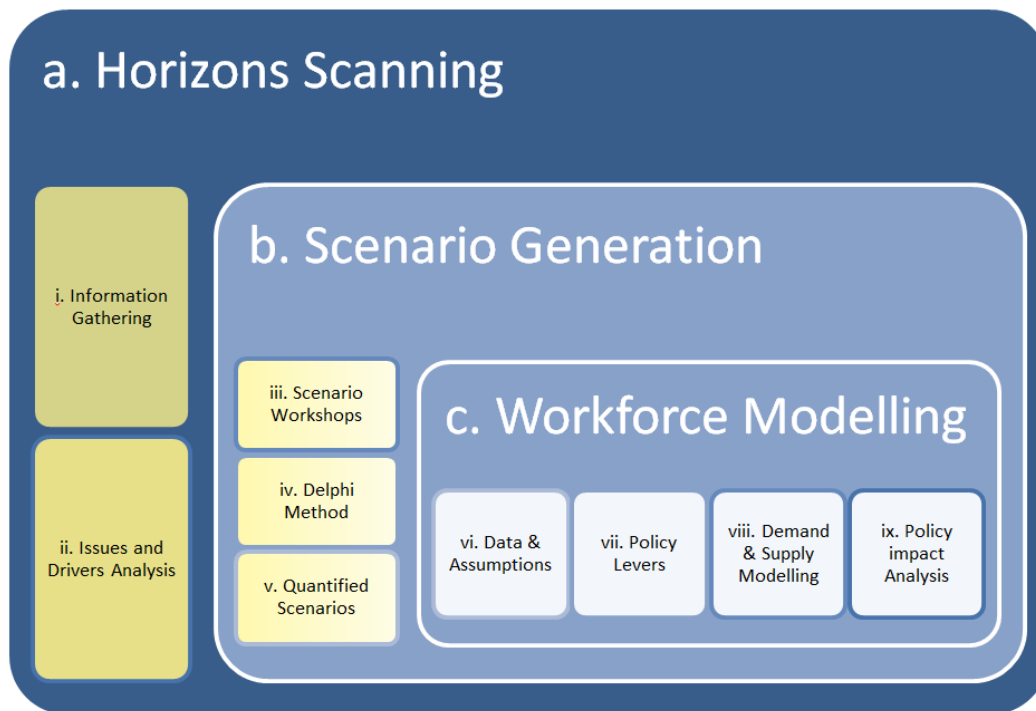
2.1 Methodology

The focus of this horizon scan is the pharmacy workforce in clinical and healthcare settings. This includes all healthcare professionals registered as a pharmacist with the Australian Health Practitioner Regulation Agency, regardless of practice setting or registration type. Considered also are pharmacy assistants and technicians.

2.1.1 Literature review

An initial literature search into the key trend influencing the NSW pharmacy workforce was conducted by the NSW Ministry of Health, and used as a foundation for this report. To augment the findings of the initial review, a comprehensive search of peer-reviewed, organisational and grey literature was undertaken. Key words relevant to pharmacy services were identified. Details of the key words are included below at Appendix A. Major databases including CINAHL and OVID were accessed. Recent publications were prioritised and available published data was considered in the review. Stakeholders were also invited to recommend references.

2.1.2 Stakeholder consultation

A workshop with senior pharmacists and technicians from a range of LHDs was conducted on 29 May 2015. A short series of 1:1 interviews with (3) pharmacists were also conducted to explore specific trends in greater detail. The purpose of these interviews and the stakeholder workshop was to further explore and prioritise key demand and supply drivers for the pharmacy workforce in NSW, and to better understand factors impacting future delivery of pharmacy services (see Appendix B for list of stakeholders).

3   Summary of key demand and supply factors

An overview of the drivers impacting the supply and demand of the pharmacy workforce identified in the literature review and stakeholder engagement processes are summarised in Figure 3 and Table 1 and Table 2 below:

Figure 3: Summary of key demand and supply factors

Demand drivers	
Ageing, chronic disease and complexity of therapies Increasing burden of disease and patient risk	**Clinical governance** Meeting standards and administrative load
Clinical Information Technology systems Requirements of Information Technology to manage clinical processes	**Legislation and policy** Legal prescribing requirements and restrictions; e.g. Special Access Scheme drugs
Impacts of other models of care Shifts towards shorter lengths of stays leading to increased pharmacist involvement	**Corporate management responsibilities** Growing focus on health management activities

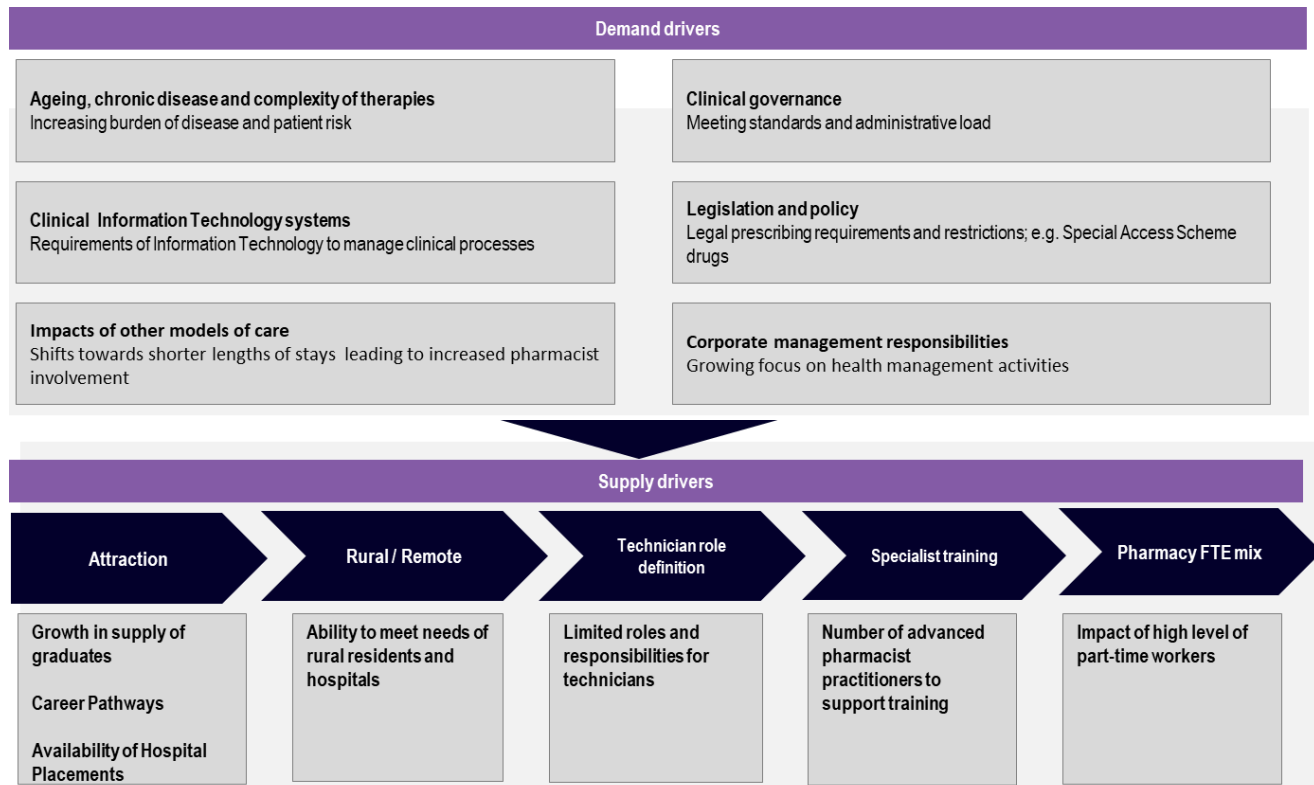| Supply drivers				
Attraction	**Rural / Remote**	**Technician role definition**	**Specialist training**	**Pharmacy FTE mix**
Growth in supply of graduates Career Pathways Availability of Hospital Placements	Ability to meet needs of rural residents and hospitals	Limited roles and responsibilities for technicians	Number of advanced pharmacist practitioners to support training	Impact of high level of part-time workers

Table 1: Pharmacy demand drivers

Driver	Description
Ageing, chronic disease and complexity of therapies	Impacts on pharmacy services due to burden of disease and patient risk resulting from ageing and comorbidities
Clinical Information Technology systems	Requirements of supporting the clinical information technology systems to manage pharmacy services
Clinical governance	Requirements of managing and maintaining clinical standards and regulations
Impacts of other models of care	Shifts towards shorter lengths of hospital stays leading to more frequent and involved pharmacy engagement
Legislation and policy	Managing the legal requirements and restrictions for prescribing. Dispensing of Special Access Scheme and drugs of dependence
Corporate management responsibilities	Growing focus on health management activities impacting on capacity

Table 2: Pharmacy supply drivers

Driver	Description
Attraction to the profession	Growth of supply of graduates to the workforce
Funding for positions	Limitations in the number of training placements available
Constraints in career pathways	Alignment of the Award with the duties of pharmacy; and, reward and recognition
Rural/remote	Sufficiency of pharmacy services to meet the needs of rural residents and hospitals
Technician role variation	Broader role requirements for technicians
Specialist training	Number of advanced pharmacist practitioners to support training
Pharmacy FTE mix	Managing impacts on service delivery due to high levels of part-time workers

4 Overview of the profession

This section presents information on the pharmacy profession, including: entry to the profession; scope of practice; workforce characteristics; and, pathways to access pharmacy services.

4.1 Entry to the profession

An approved program of study and an internship must be completed in order to be eligible for professional registration (Pharmacy Board of Australia, 2015). There are various university degrees and programs available in the study of pharmacy. A list of approved programs of study is attached in Appendix C. There are also various pathways into university. These include pathways for school leavers with the required Australian Tertiary Admission Rank score; and, mature age entry students who are able to satisfy eligibility criteria. Some Australian universities may allow students who have graduated from a relevant degree, e.g. science, biomedical science, biomedicine or pharmaceutical science to complete an additional two years of study to qualify as a pharmacist (Monash University, n.d.). Under the Health Practitioner National Law, all students enrolled in an approved program of study, or who are undertaking clinical training, must be registered with Australian Health Practitioner Regulation Authority (AHPRA) as a student with their respective National Board. AHPRA's role is to protect the public by setting standards and policies that all registered health practitioners must meet (Australian Health Practitioner Regulation Agency, 2015).

Intern pharmacists require a provisional registration, after which they must submit proof of internship, completion to the AHPRA and apply for general registration in order to be permitted to practice unsupervised (Pharmacy Board of Australia, 2014). Written and oral examinations must be passed in order to gain general registration (Australian Pharmacy Council, N.D.). Limited registration is also available for pharmacists undertaking postgraduate training, research activities, teaching or other practice areas which align with public need (Pharmacy Board of Australia, 2015).

Following a minimum of two years' practice and with the completion of at least 60 hours of specific continuing professional development activity, pharmacists may apply for accreditation with the Pharmacy Board of Australia which enables them to conduct a range of medication safety and quality reviews (The Society of Hospital Pharmacists of Australia, 2014).

Various courses which provide additional job skills may include: Graduate Certificate in Good Manufacturing Practice; Graduate Certificate in Pharmaceutical Medicine; Graduate Certificate in Pharmacotherapy; Graduate Certificate in Pharmacy Practice; Graduate Diploma of Applied Pharmacy Practice; Graduate Diploma of Good Manufacturing Practice; and, Graduate Diploma of Pharmaceutical Medicine.

4.2 Scope of Practice

Pharmacy is one of the most trusted professions in Australia and has had a strong presence in the community for 150 years (Pharmaceutical Society of Australia, n.d.). The profession is not only one of the largest groups of health professionals in Australia it is also one of the most frequently accessed healthcare services in Australia with survey results indicating that in 2011-2012, 94% of Australian adults used pharmacy services (The Menzies centre for Health Policy and Nous Group, n.d.).

Pharmacy practice in Australia includes the custody, preparation, dispensing and provision of medicines, together with systems and information to assure quality of use. Pharmacists also provide counselling to patients on the best use of medicines as well as advice on symptoms and the management of common ailments, possible medication side-effects and drug interactions.

They also provide health education to customers, patients and other health professionals (Health Workforce Australia, 2014).

The scope of practice in pharmacy describes the professional role that pharmacists perform and services they provide which is usually determined by the setting they work in (Pharmaceutical Society of Australia, 2010a). The scope of practice of a pharmacist can vary as regards specificity. For example, a generalist pharmacist has a broad scope of practice whereby services are provided to a wide variety of consumers and medical conditions. However the professional focus of other pharmacists may be more focused on specific consumer groups or a specific range of medical conditions across a wide variety of consumers (Pharmaceutical Society of Australia, 2010a).

Over recent years the scope of practice has changed considerably with an increasing tendency for pharmacists to specialise in certain areas such as management, compounding and medicine management. These changes generally reflect the increasing complexity of patients and toxicity of medicines and the need for customisation (Pharmacy stakeholder feedback). Scope of practice has not only changed in terms of complexity of treatments but also in terms of extended scope whereby we see the trialling of pharmaceutical prescribing by pharmacists in some jurisdictions. The provision for this extended scope of is also reflected in the recent sixth Community Pharmacy Agreement.

Pharmacists tend to work in the community or hospital setting although some pharmacists work in industrial and research settings (Pharmaceutical Society of Australia, n.d.). Pharmacists may also provide services in home settings and remotely (Cantina, 1997; Corcoran et al., 2003; Pharmaceutical Society of Australia, 2010b). Those that work in hospitals often work as part of the healthcare team to optimise the use of medicines for patients; they also undertake activities including formulating medicine-related policy and protocols, and the education of hospital staff (Health Workforce Australia, 2014). Some pharmacists may also provide community-based palliative care services (Needham et al., 2002). Accredited pharmacists may provide Home Medicines Review, Residential Medication Management Review and Quality Use of Medicine services (Pharmaceutical Society of Australia, 2015a). In NSW Public health, pharmacists are employed in hospitals, Mental Health, Aged Care, Palliative Care and Community Health. Hospital pharmacists play a key role in ensuring continuity of care throughout a client's healthcare journey with other providers, most significantly in the areas of health promotion, prevention of ill health, chronic disease management and education in the proper use of medicine (Pharmaceutical Society of Australia, N.D.). In Australia, pharmacists are involved in the delivery of a number of government health management initiatives, including smoking cessation, therapies for drug addiction and weight management (Aged Care Services Australia, n.d.; Pharmaceutical Society of Australia, 2010b).

Compounding pharmacists are generally community based pharmacists who customise medication forms, strengths and dosages for individual clients. These pharmacists are perceived as requiring specialised advanced skills and knowledge, however no dedicated accreditation framework for this arm of the profession presently exists (Australian Pharmacy Council, 2013). Hospital pharmacists are usually required to customise medications such as chemotherapy drugs and other sterile medications and therefore can also be classed as compounding pharmacists although this is not a term usually used in the context of hospital pharmacy (pharmacy stakeholder feedback). In some cases, a trained hospital technician will, under the supervision of the hospital pharmacist, prepare the compound. Although pharmacists are not presently granted vaccination endorsement, trials have recently been conducted in Australia with a view to including vaccination in pharmacists' scope of practice (Lau et al., 2014). Comprehensive practice guidelines for pharmacists in Australia have been developed in partnership with

numerous government and professional bodies and continue to be revised and enhanced (Pharmaceutical Society of Australia, 2010a; The Society of Hospital Pharmacists of Australia, 2013). While pharmacists may not prescribe most medicines, they are permitted to prescribe and dispense Schedule 2 "Pharmacy Only" and Schedule 3 "Pharmacist Only" medications. Pharmacies also dispense Schedule 4 and Schedule 8 prescription only drugs (see Appendix C for list of medicine schedules).

Hospital pharmacists dispense a range of highly specialised medicines that are not available in community pharmacies. These are medicines for the treatment of chronic conditions which, because of their clinical use or other special features, are restricted to supply through public and private hospitals having access to appropriate specialist facilities. A general practitioner or non-specialist hospital doctor may only prescribe Highly Specialised Drugs to provide maintenance therapy (Australian Government, n.d.). Special Access Scheme drugs comprise unapproved treatments for a single patient that can be issued on a case by case basis (Department of Therapeutic Goods Australia, n.d.).

4.3 Workforce characteristics

An overview of the Pharmacy workforce conducted by the Australian Institute of Health and Welfare data reveals that in 2013:

- There were 27, 972 registered pharmacists in Australia

- The pharmacy workforce was approximately 60% female and 40% male

- 36% of the pharmacy workforce was aged 30 years or under and 15% was aged 55 years or older

- Approximately 90% of pharmacists worked in a clinical role, i.e. providing patient care through medicine dispensing and consumer advice

- FTE per 100,000 population decreases in areas that are remote

- The pharmacy FTE per 100,000 in New South Wales was 86.8, below the national average of 90.1.

Figure 4 below shows the FTE per 100,000 registered pharmacists in Australia. It can be seen that with 86.8 FTE per 100,000 of population, NSW has one of the lowest ratios of pharmacists in Australia (national average, 90.1).

Figure 4: FTE registered pharmacists per 100,000 of population, Australia, 2013
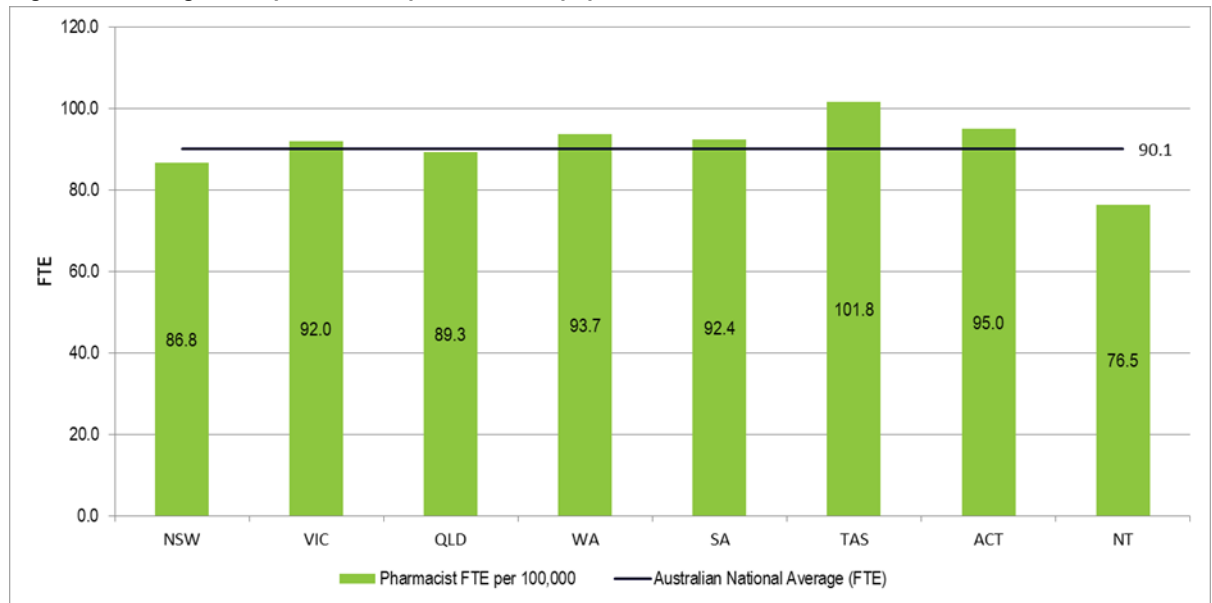

Source: Australian Health and Welfare data (Australian Institute of Health and Welfare, 2015a):

Registered pharmacists represent approximately one-third of the pharmacy workforce, with the remainder comprised of assistants and technicians (see Figure 5) (The Pharmacy Guild of Australia, N.D.). When broken down by practice setting significant variations are observed, with registered pharmacists comprising approximately 25% of the community-based pharmacy workforce (the remainder comprising assistants and technicians) and approximately 55% of the hospital-based pharmacy workforce (the remainder comprising assistants and technicians) (The Pharmacy Guild of Australia, N.D.). Approximately nine out of ten employed pharmacists practice in community settings, with only one in ten practicing in hospital settings (see Figure 5) (The Pharmacy Guild of Australia, N.D.). Unsurprisingly, three-quarters (75%) of pharmacists work in the private sector and 25% in the public sector (Health Workforce Australia, 2014).
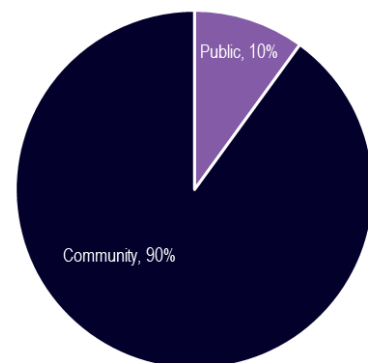
Figure 5: Pharmacy workforce type and setting

Figure 1 : Pharmacy workforce type, Australia, 2012
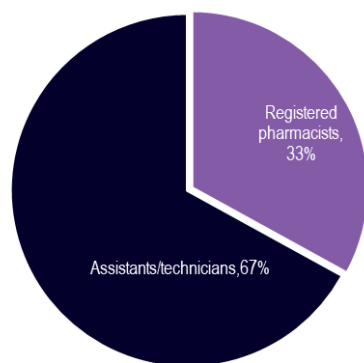
Source: Workforce Australia, 2014

Figure 2: Pharmacy workforce setting, Australia 2012

Source: Pharmacy Guild Australia

Source: (Health Workforce Australia, 2014)

4.3.1 Pharmacy role vacancies

Some pharmacists have indicated that although a shortage exists amongst the rural workforce, there may be an oversupply of hospital pharmacists in metropolitan areas in NSW. This perceived imbalance may encourage new graduates to seek rural pharmacy employment opportunities (Smith et al., 2013). In New South Wales in 2013 the number of pharmacists working in regional and remote areas was two-thirds the density of those working in metropolitan areas (Australian Institute of Health and Welfare, 2015a).

Hospital pharmacist positions have exhibited higher vacancy rates than community-based positions, especially in metropolitan hospitals (National Rural Health Alliance Inc., 2014; Pharmacy Guild of Australia, n.d.). Between 15% and 40% of registered pharmacists are either not working in clinical/frontline roles or not working in the profession (Health Workforce Australia, 2014; Mak et al., 2013). Anecdotal feedback from stakeholders indicates that this may in part be due to pharmacists deciding to leave the profession to pursue a different career.

4.4 Professional Representative Organisations

There are various professional pharmacy bodies and boards across Australia. These organisations provide different services for and on behalf of pharmacists in Australia and may include one or more of the following: professional advocacy; development of professional standards; accreditation; regulation services; and the implementation of relevant initiatives. Membership is generally voluntary and membership costs vary depending on the type of membership. A brief overview of these organisations is provided below.

4.4.1 Pharmaceutical Society of Australia

The Pharmaceutical Society of Australia represents all pharmacists regardless of sector or practice setting, providing membership services, standards and resources (Pharmaceutical Society of Australia, 2015b). The society engages with other government and industry bodies in the development and implementation of policies, professional standards and other initiatives relevant to the profession (Pharmaceutical Society of Australia, 2010b). Membership is free to students and is currently $690 per annum for registered pharmacists (Pharmaceutical Society of Australia, n.d.).

4.4.2 Pharmacy Board of Australia

The Pharmacy Board of Australia, part of the Australian Health Practitioner Regulation Agency, operates the processes of professional registration for pharmacists (Pharmacy Board of Australia, 2015).

4.4.3 Australian Pharmacy Council

The Australian Pharmacy Council provides independent accreditation for approved programs of study and conducts written and oral examinations. The Council also assesses the experience and credentials of international applicants for pharmacist registration (Australian Pharmacy Council, N.D.).

4.4.4 Pharmacy Guild of Australia

The Pharmacy Guild of Australia represents community pharmacy owners and managers by liaising with government, industrial and professional bodies across the profession (The Pharmacy Guild of Australia, 2015). The cost of membership is free to students. However, for registered pharmacists, membership costs $374 per annum for pharmacists who do not own a pharmacy. For those who do own a pharmacy, there are different cost structures which are contingent on

how many pharmacies are owned by the member (The Pharmacy Guild of Australia - NSW Branch, n.d.).

4.4.5 The Society of Hospital Pharmacists Australia

The Society of Hospital Pharmacists Australia represents hospital pharmacists and provides accreditation services to pharmacists seeking to provide additional services (The Society of Hospital Pharmacists of Australia, N.D.). Membership ranges from $99 per annum for students to $374 per annum for ordinary or associate membership (The Society of Hospital Pharmacists of Australia, n.d.)

4.4.6 Australian Pharmacy Liaison Forum

The above groups collaborate through the Australian Pharmacy Liaison Forum (Australian Pharmacy Liaison Forum, 2011).

4.5 Pathways to access pharmacy services

Community pharmacists are among one of the most accessible groups of primary healthcare providers due to their widespread locations and walk-up consultation availabilities (The Pharmacy Guild of Australia, n.d.). Subsequently, pharmacists are often a client's first point of contact with the healthcare system (Pharmaceutical Society of Australia, N.D.). Community clients frequently attend either voluntarily or following receipt of a prescription from a general practitioner, while hospital inpatients receive pharmacy services as a routine component of their course of care or through a multidisciplinary team (Horsfield et al., 2014; The Society of Hospital Pharmacists of Australia, n.d.). According to stakeholders, although hospital pharmacists are not restricted to provide services on a referral basis only, their ability to provide advice in the absence of a referral is dependent on hospital capacity.

Although public patients do not pay for any of their medical expenses while in hospitals, patients in NSW and the Australian Capital Territory hospitals cannot access medication through the PBS as these jurisdictions do not participate in the Reform Agreement with the Commonwealth (Australian Government, Department of Health, n.d.). In jurisdictions that participate in the Agreement patients can have a PBS prescription written and supplied by the public hospital upon discharge thus providing greater treatment duration. However, in NSW, patients may need to make a GP appointment within a week after discharge to obtain a new script for medication as they would normally only receive up to seven days' supply after discharge from hospital (stakeholder feedback). This therefore may add to a patient's post-discharge care needs.

4.5.1 Pharmacy access for Aboriginal people

Despite having a burden of disease up to three times that of the larger population, medication underuse is evident amongst people who are Aboriginal (Pharmaceutical Society of Australia, N.D.). Aboriginal Health Services exist to promote access to care in rural areas, including pharmacy services and medication supply (National Rural Health Alliance Inc., 2014). The Quality Use of Medicines Maximised in Aboriginal and Torres Strait Islander People's Program also provides supports for accessing pharmacy services to people who are Aboriginal (Pharmaceutical Society of Australia, N.D.). People who are Aboriginal who also live in rural and remote areas are able to access medicines through the Pharmaceutical Benefits Scheme in bulk with reduced paperwork requirements, although at times this occurs without oversight and support from pharmacists (Department of Health, N.D.; National Rural Health Alliance Inc., 2014).

5 Key drivers of demand for pharmacy services

This chapter presents information on the key drivers of demand impacting on pharmacy services that were identified through the literature review, stakeholder interviews and workshop that impact on pharmacy services in both the public and private sectors.

5.1 Overview

A number of diverse drivers that impact on the demand for hospital pharmacy services in NSW were identified through the project's literature review and stakeholder engagement process.

Figure 6 presents the drivers identified by stakeholders in order of priority and shows the emphasis that stakeholders awarded each driver. It can be seen that the most influential demand factors impacting on the NSW public hospital pharmacy workforce include: clinical IT systems; clinical governance; impacts of other models of care; legislation and policy; and corporate management responsibilities.

Figure 6: Stakeholder assessment of factors influencing demand for hospital pharmacy workforce in NSW
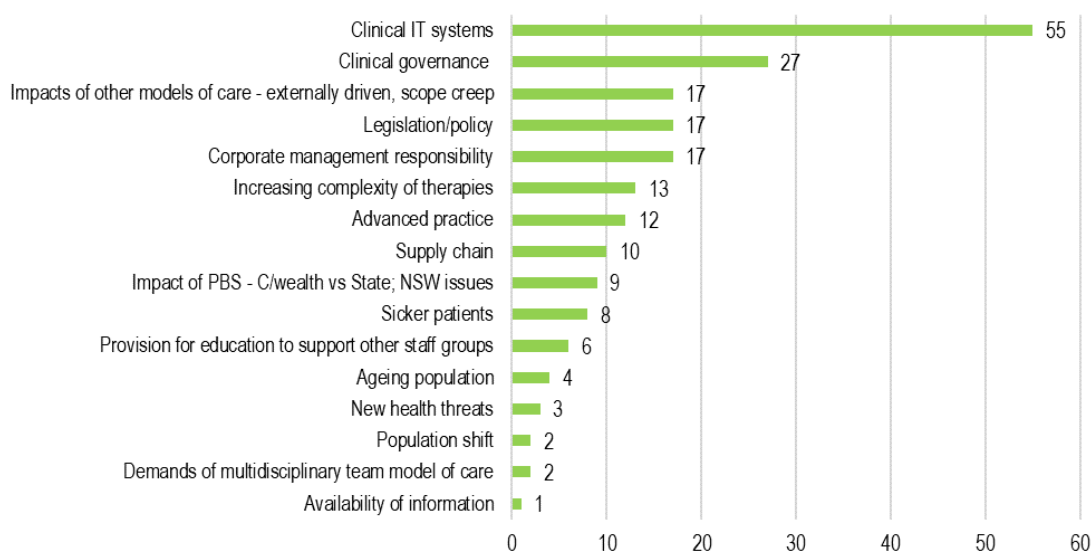
Source: NSW hospital pharmacy stakeholder workshop, May 2015

The following sections provide details on the major demand drivers identified through the literature review and from the pharmacy stakeholder workshop. Feedback garnered through stakeholder interviews is also incorporated within this chapter.

5.2 Population ageing, chronic disease and complexity of therapies

The literature review revealed that the current global picture of an ageing population and associated increased burden of chronic disease represent key drivers of pharmacy services (Pharmaceutical Society of Australia, 2013). Increased ageing, chronic disease and co-morbidities, as well as longer survival, can lead to increases in the number and complexity of medication interventions. According to stakeholders during interview, treating people who are on multiple and complex medications involves considerable assessment and monitoring of the associated risks as well as the need for greater patient education, counselling or advice on the correct use of medicines. Stakeholders contend that when coupled with the need to consider other demographic factors that may impact on communicating health information, such as patients who are Culturally and Linguistically Diverse, the demand on pharmacy services increases. Anecdotal evidence suggests that it is not unusual for pharmacists to see patients who are on five or more concurrent medications, amounting to more than twelve doses each day.

They report that this level of medicine use is generally regarded as an indicator of poor health outcomes and complexity in patient management due to heightened levels of risk associated with disease and is accompanied with increased potential for adverse reactions and misuse of medication. Accordingly, this group of patients potentially require higher levels of pharmacy engagement than other patient groups.

The availability of new types of medications such as gene therapy, New Oral Anticoagulants and genetically engineered vaccines place a further demand on pharmacy services. The increasing complexity of new drugs such as those used in oncological haematology and the increasing availability of experimental treatments (such as Special Access Scheme drugs and new clinical trials) also contribute to the increasing expectations on pharmacy services. Stakeholders contend that the increasing complexity and range of new medications also creates a requirement for stronger clinical governance which requires considerable pharmacy input. Additionally, stakeholders feel that the use of some medications should be restricted due to high cost, which in turn increases the pressures on pharmacists who may need to discuss alternate lower-cost medications with prescribers.

5.3   Clinical Information Technology systems

Clinical information technology systems are a rapidly-expanding field in healthcare. There are a range of possible systems which cross into the pharmacy domain, including electronic clinical decision support, Computerised Physician Order Entry (CPOE) systems, automated dispensing or vending machines and tele-pharmacy.

Clinical decision support tools have been shown to increase consistency of practice and documentation amongst pharmacists when linked to electronic client records (Reeve et al., 2008). The inclusion of pharmacists in the governance and evaluation frameworks of any such tools has also been recommended (Fox and Felkey, 2013). When used correctly, CPOE systems have been shown to be capable of reducing dispensing, transcription and legibility-related errors during pharmacist workflow (Slight et al., 2013). Appropriate use of these systems may also reduce adverse outcomes associated with allergies and medication interactions (Shamliyan et al., 2007). Automated dispensing machines may reduce dispensing errors, facilitate the tracking of medication supply, reduce workload and reduce delay-to-care (Fung et al., 2009). Tele-pharmacy is also emerging as a means of bridging distance and enabling the delivery of pharmacist consultations and advice in instances where clients are otherwise unable to access services, thereby promoting accessibility and driving service demand (Council on Credentialing in Pharmacy, 2010).

Appropriate training is a key consideration in the success of any such measures, especially when considering that computer literacy and information skills may vary significantly within the profession (Peterson-Clark et al., 2010).

Although there are many benefits to the automation of clinical systems, feedback from stakeholders indicates that the requirements of using these systems are a major driver of pharmacy services. Whilst these systems can simplify service delivery, stakeholders reported that the use of electronic prescribing and dispensing, as well as the increased availability of information on the quantity and variety of medicines that patients are being treated with, can lead to increases in workload due to the need to consider, manage, test and maintain these information systems. Further resource demands result from the need to consider the right linkages between prescribing systems and hospital doctors to ensure that prescriptions are only made for a medicine that is available or in stock. Stakeholders reported that failure to properly consider these linkages can impact on workload and hospital efficiency.

Stakeholder interviews indicate that database management is an additional resource burden for the pharmacy workforce as this requires both clinical and technical knowledge. Updates to these systems such as electronic plug-ins for drug interactions are not widely available, which requires manual information management which must be consistently applied across multiple electronic systems for safety reasons.

With the advent of new technologies there is a greater need for pharmacists to consider more comprehensive information, to enable high quality service provision to patients.

5.4 Clinical governance

Stakeholders argue that there is a need for clinical pharmacy services to evolve considerably with the changing and often increasing demands of hospital services. Clinical standards of practice for pharmacy in Australia describe the activities that pharmacists are required to undertake to minimise the risks associated with the use of medicines and optimise the use of medicines (The Society of Hospital Pharmacists of Australia, 2013). Hospital accreditation requirements such as Standard 4 (which covers medication safety in Australian hospitals) draw heavily on pharmacy resources. The demands of meeting core national standards like Standard 4 are drawing pharmacists into activities which may not have previously required such a large focus of time. This includes requirements of national standards such as participating in interdisciplinary ward rounds, review and updates to medical records, managing Consumer Medicine Information Systems, maintaining hospital formulary lists, developing discharge medication plans, undertaking audit and microbial stewardship activities.

Other areas where clinical governance is impacting on the pharmacy workforce include managing budgets associated with high cost of new medications and complying with regulations and providing advice on Special Access Scheme drugs. In order to support improved hospital efficiencies there is a growing drive for pharmacists to provide advice to prescribers to encourage the use of generic or lower cost drugs which provide the same clinical outcomes as more expensive drugs. These activities, whilst valuable from both a financial and quality perspective are not always factored into the resourcing of pharmacy services.

5.5 Impacts of other models of care

Pharmacy is a critical, enabling function which underpins secondary care delivery. According to workshop participants, when new models of care are introduced (increasing the use of multi-disciplinary teams for example) these changes can generate increasing demand for pharmacist services.

Other workforces (such as nursing) recognise that to support continuity of care between hospitals and the primary care sector it is important that suitably qualified professionals (primarily, pharmacists) conduct medication management review and reconciliation at key patient transition points in the patient journey (e.g. home to hospital) within different units of the hospital and hospital to home. (One regional stakeholder has described use of highly trained nursing staff who provide medication reconciliation in regional hospital facilities as an innovative approach to managing the demand for pharmacists in hospital facilities and thus ameliorate the risks for patients that might result from medication errors such as omissions, duplications, dosing errors, or drug interactions.).

For instance, the trend towards 24/7 hospital health service operation means that additional numbers of pharmacy staff may need to be rostered than has been previously required. Poor staff allocation practices can contribute to systemic delays, e.g. slower hospital admission and discharge, as well as increasing risks to patient safety.

With the growing number and complexity of new treatment plans, hospital pharmacists are increasingly required to educate other clinical groups on medication safety. In addition, pharmacists provide education and training to junior placements and technicians.

Shorter lengths of stay are also cited by stakeholders as contributing to pharmacy workload. Workshop participants report that the higher rates of patient turnover can require staff to process faster and increasing numbers, but with the same level of staff resource.

The growing specialisation of different clinical professions also impacts on pharmacy demand (as pharmacists are expected to provide highly technical advice to these specialties) however stakeholders consider the scope for pharmacy to specialise in the same vertical is narrow. Instead, pharmacists are increasingly required to operate as generalists in a specialist environment that has implications for both efficiency of services and quality of advice.

5.6   Legislation and policy

According to stakeholders, legislation and ethical requirements have implications for the supply of hospital pharmacy services. The increasing need for compliance checking of scripts and signatures - checking that the medicine order is written in accordance with legal and local prescribing requirements and restrictions and the additional legal implications and requirements in dispensing Special Access Scheme drugs can impact on workload demands of pharmacy services in hospitals. The legislative requirements for handling drugs, including the supply of drugs of addiction and restricted substances as well as keeping abreast of guidelines and changes in policy and practice are also a burden on pharmacy services.

5.7   Corporate management responsibilities

The time overhead required to address corporate management responsibilities is another factor impacting on the supply of pharmacy services according to workshop participants. Increasing health management responsibilities impacting on workloads which stakeholders consider are not always appropriately resourced. According to participants, these management responsibilities include reporting on key performance indicators; increased financial management and associated administration activity; development of strategies to improve healthcare efficiencies, for example, identifying areas of duplication and building understanding and capacity among service providers.

6 Key drivers of supply of pharmacy services

This chapter presents information on the key drivers of supply impacting on pharmacy services that were identified through the literature review, stakeholder interviews and workshop that impact on pharmacy services in both the public and private sectors.

6.1 Overview

A number of diverse drivers impacting on the supply of hospital pharmacy services in NSW were identified through the literature review and stakeholder engagement process.

Figure 7: presents these drivers in order of priority and shows the number of votes that stakeholders awarded each driver. It can be seen that the top supply drivers impacting on the NSW public hospital pharmacy workforce include: funding for positions; constraints in career pathways; rural/remote challenges; variation in technician role definition across NSW; and, specialist training.

Figure 7: Main factors impacting supply of hospital pharmacy workforce in NSW as identified by stakeholders
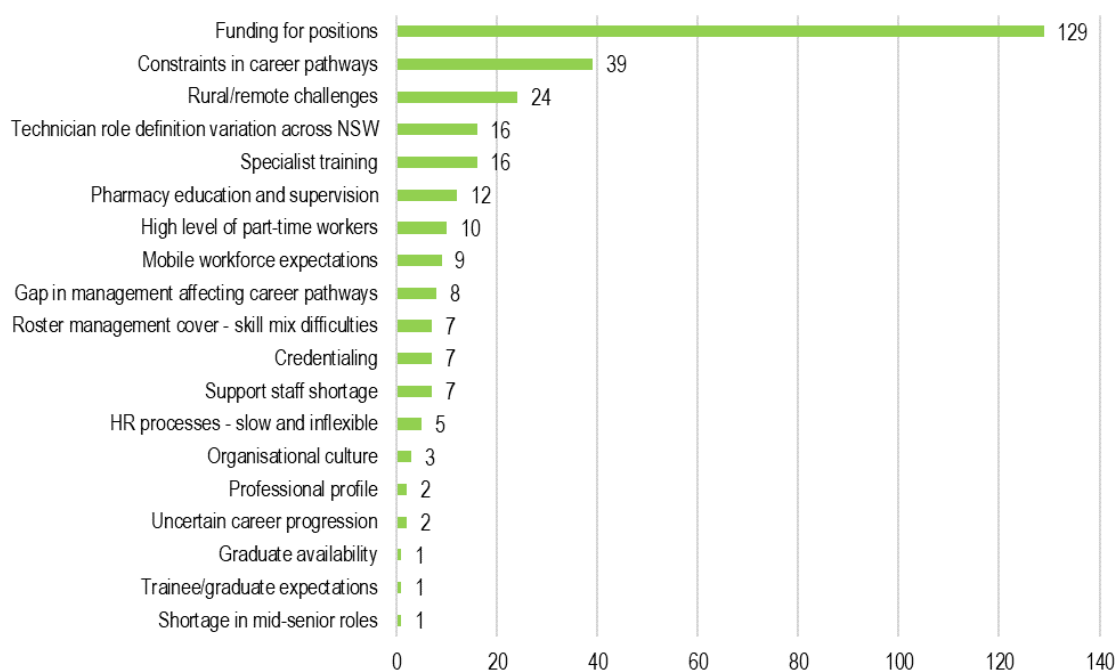
Source: *NSW hospital pharmacy stakeholder workshop, May 2015*

The following sections provide details on the major supply drivers identified through the literature review and from the pharmacy workshop. Feedback garnered through stakeholder interviews is also incorporated within this Chapter.

6.2 Growth in supply of pharmacy graduates

The literature review identified that increasing growth in the rate of new pharmacist graduations has resulted in increased workforce supply, however these new graduates may be limited in their ability to safely and fully meet practice expectations in environments which offer limited support (National Rural Health Alliance Inc., 2014). Approximately 1,200 students graduate from Australian study programs annually (National Rural Health Alliance Inc., 2014). Ongoing increases in the supply of new graduates (which has more than doubled since 2000) has been driven by an increase in the number of pharmacy schools and programs of study (The Pharmacy

Guild of Australia, N.D.). This trend may be curtailed by future perceptions of oversupply and difficulty in securing internship placement (The Pharmacy Guild of Australia, N.D.).

Pharmacy workshop participants indicated that graduates often cannot obtain a hospital placement. This is a consequence of a mismatch between university numbers (in terms of students and courses) and the availability of training placements in hospitals. In addition, stakeholders believe there is a lack of dedicated trainers in the workforce to appropriately support clinical pharmacist placements

The influx of graduates and the ability to place them is often exacerbated by what stakeholders believe to be an unrealistic expectation about the hospital pharmacy profession. New graduates can reasonably expect to be spending a large proportion of their time dispensing, when they may have expected to be working in more of a clinical pharmacy role. This mismatch between expectation and reality for new graduates may risk early job dissatisfaction.

6.3   Funding for positions

Workshop participants noted that a lack of available positions in NSW hospitals constrains pharmacy service delivery and capacity to expand services. Participants argued that additional positions would help relieve current workloads and ensure capacity for quality pharmacy involvement to continue across the full spectrum of hospital pharmacy services.

There is an expressed view that the current level and design of pharmacy roles has not kept pace with the expanding scope of the pharmacist practice in hospitals. Hospital pharmacy services are impacted by increasing hospital admission rates, shorter stays and higher patient turnover (Australian Institute of Health and Welfare, 2015b). These trends in turn increase pharmacy activity, such as medicine reconciliation and services provided in outpatient areas. Stakeholders report that increased numbers of staff are required to provide the necessary level of professional advice.

Additionally, it was suggested that the implications of the recent Commonwealth funding changes to the Home Medicine Review process - whereby reviews are capped so that accredited pharmacists can only provide services to 20 patients per month – could also be considered as part of NSW state service planning.

Support for auxiliary roles is also strong amongst the pharmacists consulted. An increased prevalence of Pharmacy technician staff offers potential to enable pharmacists to focus more on the clinical and technical aspect of their service and free them up from other, lower value activity, drug delivery logistics and data quality assurance activities for example.

Consultation identified a range of possible elements for consideration in any future planning as follows:

- Service mix: inpatient services, patient mix and specialist services, and outpatient services. For example, outpatient services at St Vincent's Hospital dispense HIV medication which cannot be obtained at a community pharmacy, requiring more intense staffing than might otherwise be required

- Hours of service and number of days per week the hospital pharmacy is open

- Use of Activity Based Funding model corresponding to different service settings, e.g. inpatient versus outpatient to ensure that calculations match pharmacy activity

- Provision of medications on discharge

- Participation in the Highly Specialised Drugs (high-cost, non-PBS drugs) Program

- Facilitation and complexity of participation in clinical trials

- Specialist paediatric hospital pharmacies often require more sophisticated and specialised levels of pharmacist advice and may warrant extra staffing

- Level of management and support required for example and volume of procurement activities

- Safety and quality and other governance initiatives requiring pharmacist participation and advice

- Whether the service is facility-specific or networked to a number of facilities.

Other government funding initiatives which decrease cost, time and/or administrative barriers to pharmacy services may also be considered as service drivers (Taylor et al., 2013). This includes current Government-funded initiatives aimed at improving access to pharmacist services such as Home Medicine Reviews, Medscheck, Diabetes Medsheck, Dose Administration Aids, National Diabetes Services Scheme, Opioid Dependence Treatment and Residential Medication Management Reviews (National Rural Health Alliance Inc., 2014). The government-funded Rural Pharmacy Liaison Officer program promotes service access in rural and remote areas (Pharmaceutical Society of Australia, N.D.).

The upcoming Sixth Community Pharmacy Agreement (Department of Health, 2015) includes scope for pharmacists to discount client medication co-payments by $1. It is anticipated that this initiative may promote accessibility and medication compliance for patients while encouraging enhanced competition in the community pharmacy sector (Department of Health, 2015). The agreement will also double funding for community pharmacist-delivered clinical services over the 5-year period of the agreement (Department of Health, 2015).

6.4 Constraints in career pathways

According to workshop participants, LHD's interpretation and application of the award may impact negatively on grading of roles, creating misalignment between levels of reward and remuneration with duties performed, which inhibits progression through different grades.

Additionally, stakeholders report that they have experienced difficulty when seeking to re-grade (i.e. upgrade) pharmacist and technician positions.

Overall stakeholders suggest that the role structures do not sufficiently encourage career development for technicians. For example, after a pharmacy assistant completes two years of education they are at the top of their grade. Completing a Certificate III pharmacy qualification would then make the individual eligible to apply for pharmacy technician roles. However, there is no material remuneration difference between the two roles and thus no incentive for pharmacy assistants to undertake further education. Providing more targeted training to technicians could help improve career pathways and support realisation of workplace efficiencies by creating more time for pharmacists to engage in higher value clinical activities rather than lower-value tasks.

6.4.1 Pharmacists

According to stakeholders, career pathways for clinical pharmacists could also be improved. Often talented pharmacists will leave the public system to practice in rewarding, high profile private sector roles where they may lead clinical trials, move into advisory roles such as at the National Prescribing Service or the NSW Therapeutic Advisory Group, or even take on editorial roles such as within the British National Formulary.

It was suggested that the pharmacy workforce may benefit with the establishment of departmental structures that give senior staff a better balance between clinical and management duties, and/or facilitate pharmacy access to a management stream that looks after finance and

revenue. Feedback from stakeholder interviews suggests that there may be potential for improvement in hospital efficiencies if the scope of practice was expanded so that Specialist Clinical Pharmacists were able to prescribe. Reference was made to the United Kingdom whereby pharmacists can be independent prescribers, which means they can prescribe any medicine for any medical condition within their competence, including some controlled medicines (National Health Service UK, n.d.). Stakeholders argue that prescribing authority granted to Specialist Clinical Pharmacists in Australia would negate the need to wait for a Junior Medical Officer to write discharge scripts and thus speed up the hospital discharge process.

6.4.2   Recognition of contribution

A lack of recognition from the wider health system as to the breadth of the pharmacy role was also cited by stakeholders as an influence on staff retention and therefore impacts on pharmacy workforce supply. Stakeholders indicate that at times they can feel jaded by bureaucracy and a sense of not being supported. This in turn was reported by stakeholders as contributing to career 'burn-out' and a move to another profession. This feeling of not being properly recognised for their contribution is exacerbated by what stakeholders view as negative portrayal by mainstream media whereby pharmacy is often blamed for delays in hospital discharge for example.

6.5   Rural/remote challenges

Attracting workforces to rural and remote parts of NSW is considered by stakeholders to be an important supply challenge for pharmacy. Factors impacting the recruitment and retention of rural pharmacists include perceptions of professional isolation, high workload (Khalil and Leversha, n.d.). Quality of life, increased professional opportunities, increased affordability and higher-quality professional relationships are regarded as benefits of rural pharmacist practice (Smith et al., 2011).

NSW uses a network model to deliver pharmacy services to rural and remote areas. This involves pharmacists operating out of base hospitals and travelling to smaller networked health services. Stakeholders contend that working in rural and remote areas can present more challenges than working in metropolitan areas. For example, it may be more difficult to book annual leave owing to a lack of available pharmacists to cover shifts and working environments are often more isolated. One suggestion was that more emphasis could be placed on building an improved locum service system that is designed on a cost recovery basis. Enhancing the incentives to encourage students to work in rural areas was also suggested, as well as giving greater focus to the retention of rural pharmacists who may have grown up in the area and had a desire to stay on. This is supported by the literature that shows approximately 60% of rural-based pharmacists originated from rural areas while 40% had moved from urban areas (Smith et al., 2013).

According to stakeholders, emerging technologies of e-health and telehealth show promise in better leveraging the workforce to enable equity of access and also to reduce the workload of rural hospital pharmacists.

The literature review revealed other potential solutions to rural workforce shortages in NSW including the provision of allowances based on remoteness and bonding rural scholarships to minimum lengths of service (Pharmaceutical Society of Australia, N.D.). However, new graduates may be limited by their inexperience to safely and fully meet practice expectations in environments which offer limited support (National Rural Health Alliance Inc., 2014).

6.6   Technician role definition variation across NSW

Variation in the role definition of pharmacy technicians is cited as an important supply driver of pharmacy services. Stakeholders agree that the role of pharmacy technicians varies considerably

across NSW hospitals with service and training models not properly aligning the role with service needs. Stakeholders contend that there is a broader role required for technicians. This includes upskilling technicians to perform non-clinical roles in order to free up pharmacists' time, for example completing paper work for Special Access Scheme drugs. It was also suggested that the workforce would benefit if there was more clinical content in technician training in Australia as is the case in the United Kingdom where technicians are more involved in running the dispensary. It was suggested that having a technician available to provide dispensing services would ease the burden on pharmacists, particularly those pharmacists who function independently (in smaller services) and who are often unable to leave the dispensary.

In the United Kingdom (National Health Service, UK, N.D.), pharmacy technicians can specialise in areas such as medicines management, manufacturing, quality control, education and training, information technology, supplies procurement, clinical trials or medicines information services. Pharmacy technicians employed through the National Health Service work on wards, liaise with other healthcare professionals and have close contact with patients, ensuring that they have the correct medications and are using them appropriately. Pharmacy technicians are also involved in assembling and labelling dispensed items, and many undertake additional training so that they are able to perform final accuracy checks on dispensed medicines immediately before they are released to the patient. Currently in Australia, technician training is limited mainly to process tasks with less focus on clinical work. It is acknowledged, however, that in order for the scope of the pharmacy technician role to be wider there will need to be changes to legislation as well as the development of compliance frameworks. This issue would require resolution predominately at the Commonwealth legislative level.

6.7   Specialist training

Workshop participants reported that at present there are insufficient numbers of advanced pharmacist practitioners in NSW public hospitals. This in turn can lead to a lack of capacity to provide adequate training to graduates. Some universities offer Masters in Clinical Pharmacy and other Graduate Certificates in specialised areas however the onsite practical component of training is lacking due to the small number of advanced pharmacist practitioners who could provide supervision. Stakeholder interviewees note that some Australian pharmacists have gone to the U.S or U.K for further training as an advanced practitioner (e.g. expanded roles which include some prescribing rights) due to there being fewer opportunities available in Australia. Interviewees contend that at present there is no standard pathway in Australia to become an advanced practitioner and thus the quality of individual practitioners may vary.

6.8   Pharmacy FTE Mix

According to workforce statistics, the pharmacy workforce is predominately female (approximately 60%) and young with 36% of the pharmacy workforce aged 30 years or under (Australian Institute of Health and Welfare, 2015a). This cohort profile influences a higher demand for part-time and flexible workplaces in order to support family and life choices. The need for staff to travel and/or relocate combined with less family-friendly work conditions may impact on the ability to fill positions, particularly in rural and remote areas.

7 Challenges

The literature review and stakeholder engagement process highlighted a number of issues that represent current challenges to pharmacy services in NSW. These include:

- Managing the risks (e.g. adverse drug interactions; and, toxicity due to compromised patient health) associated with treating people who are on multiple and complex medications

- Managing the increasing demands on pharmacists to undertake non-traditional pharmacy activities (e.g. meeting core national standards associated with the provision of antimicrobial stewardship, such as NSQHS Standard 3 (Australian Commission on Safety and Quality in Healthcare, n.d.) and consumer medicines information, medicines lists and audits) as well as managing labour intensive new technologies

- Service and training models not properly aligning with service needs e.g. models of care leading to shorter lengths of hospital stays increase patient turnover and hence necessitating more frequent pharmacist engagement that may not be sufficiently resourced; and increasing specialisation of multi-disciplinary team that may not match specialisation of a pharmacist

- Activity-Based Funding models which may not necessarily include the cost of all pharmacist participation. This impacts both the state government and health service, who may be under-presenting the true cost of the service, and disadvantaging pharmacy departments who are unable to fully fund or resource the participating positions. Funding may also not reflect some of the back room supports provided by pharmacists such as maintaining databases and equipment

- Increasing growth in the rate of new pharmacist graduations without matching available placements in hospitals or the community

- Managing the costs of drugs in an increasingly expensive health system

- Lack of career pathways for hospital pharmacists which may impact on staff satisfaction and retention

- Providing 'generic' services in an increasing specialist health environment

- Improving the image of pharmacy, both across the NSW Health landscape and in the media

- Rural and remote challenges whereby residents generally experience decreased access to medicines and pharmacy services; receive less advice regarding medication management than residents of more densely-populated areas; and experience higher rates of ill health (National Rural Health Alliance Inc., 2014)

- Delivering services to people who are Aboriginal and/or living in remote communities.

8   Opportunities

This section outlines a number of opportunities identified through the literature and stakeholder consultation process which have potential to enhance the effectiveness and efficiency of NSW public hospital pharmacy services. These opportunities can be grouped into two broader areas: career pathways and placements; and, models of care.

Also included below is a brief overview of gaps in the literature which present an opportunity for future research and other considerations for future planning.

8.1   Career pathways and placements

The review process and views expressed by stakeholders identified that improvements to career pathways and placements could enhance pharmacy workforce effectiveness and efficiency as follows:

- LHDs and professional bodies could collaborate to develop enhanced career pathways (to provide more management opportunities for example) to facilitate career progression prospects for new pharmacists and enhance attraction to the profession.

- Additional support would be beneficial for those pharmacists seeking specialise in key are areas such as oncology, haematology and renal services. It is important to note however that increased specialisation of resources would need to be balanced with appropriate provision of generalist resources to maintain levels of service provision.

- Expanding the role of technicians to free up pharmacists to conduct core clinical activities. This could include: having closer contact with patients, ensuring that patients have sufficient medicines and are using them appropriately, performing final accuracy checks

- Leadership from professional bodies could occur to engage with education providers and system managers in order to standardise the national qualifications for pharmacists and technicians and better facilitate portability of skills between different jurisdictions.

- There is potential to consider new/additional incentives to encourage more graduate placements in rural areas

- Improved liaison between universities, health policy makers and the pharmacy profession to inform the sustainable growth of pharmacy graduates

- Examining the implications and opportunities for public pharmacy roles and responsibilities in relation to changes in prescribing rights articulated in the sixth Community Pharmacy Agreement Department of Health, 2015.

8.2   Models of care

Several models of care improvement opportunities have been identified through the review process and consultation with stakeholders that would further enhance workforce effectiveness and efficiencies. These include:

- Privatising the provision of Home Medicine Reviews and Aged Care facility reviews whereby public pharmacists are released from their state role to provide these services whilst utilising Medicare billing in the capacity as a private practitioner

- Leveraging telehealth to ensure sufficient coverage and efficiency in delivery of pharmacy services in rural and remote areas. This would require a competent clinician to attend with the patient and a pharmacist to provide the service. The clinician should be able to provide treatment under guidance. Telehealth could also be used to provide clinical supervision, education, and support to remote clinicians working independently. Any benefits anticipated

as a result of using telehealth to support pharmacy services will only be realised if the initiatives are appropriately implemented and incorporate a user and patient-centred approach to the technology and workflows, including a comprehensive change management approach.

- Investigating the potential of recruiting dedicated pharmacists for the purpose of promoting the prescription of generic and lower costs drugs that are demonstrated to yield the same health outcomes as expensive alternatives

- Producing a glossary of pharmacy services which could promote broader understanding of the role and functions of the public pharmacy workforce

- Development of information systems and/or data sources that can: inform pharmacy staffing allocations; quantify the roles, responsibilities and services provided by the pharmacy workforce; and demonstrate hospital efficiencies due to pharmacy involvement at key stages in the patient journey.

8.3 Opportunities for community pharmacy

Opportunities for community pharmacy, both private and government owned, include:

- Investigating the potential for the scope of pharmacy practice to widen due to changes in prescribing rights, including vaccinations, emergency prescription refill and ordering of laboratory tests

- Utilising care/health pathways to support clinicians to plan patient care through primary, community and secondary health care systems. There is decision support software which is designed to be used at the point of care, primarily for general practitioners but may also be utilised by specialists, nurses, allied health and other health professionals.

8.4 Gaps in the current body of literature

Presently a database is maintained on PBS prescriptions, however data is not included on all prescriptions (i.e. non-PBS items). This limits the ability for accurate prescription rates to be used for the purpose of evaluating access to health services (National Rural Health Alliance Inc., 2014).

Although there is evidence of wider system benefits being realised when pharmacists participate in multidisciplinary teams, evaluations of specific team types and team settings have not been widely conducted (Packard et al., 2012). The ongoing surveillance for programs trialling and evaluating specialised multidisciplinary teams involving pharmacists may be merited.

In addition, standards, guidelines and competencies for extended practice opportunities are largely undeveloped.

8.5 Other considerations for future planning and scenarios generation

A number of other considerations to explore in the next phase of the workforce planning process have also been identified through the literature review and stakeholder consultation process as outlined below. Listed also are a number of scenarios and ideas that were discussed at the stakeholder workshop.

8.5.1 Data quality

The use of registrant numbers as a basis for workforce planning purposes may not be advisable as between 15% and 40% of registered pharmacists are either not working in clinical/frontline roles or not working in the profession (Health Workforce Australia, 2014; Mak et al., 2013). In

addition, enhancement of national prescription data may facilitate evaluation of service demand and utilisation.

8.5.2 Extended scope of practice and workforce sustainability

The momentum towards extending the scope of practice of pharmacists in a large number of areas may require the input of all key industry bodies along with associated regulatory, training, competency, credentialing, standard and accreditation considerations.

In addition, consideration may need to be given to building sustainability of pharmacy services given the implications of extended scope of practice and increasing demands on clinical pharmacists.

8.5.3 Monitoring and evaluation of new technologies

The potential benefits, risks and implications of the rapidly-expanding types and capabilities of technological factors may warrant significant ongoing evaluation. Anticipating and monitoring future technological developments and their implications for pharmacy such as three-dimensional printing and personal electronic bio-monitoring devices such as fit-bits might also be a consideration for future planning.

8.5.4 Workforce retention

Measures targeting the re-engagement of registered pharmacists not currently working in the profession may warrant further investigation.

8.5.5 Workshop scenarios and idea generation

With the changing nature of chronic illness and treatments, what are some of the potential specialised roles for pharmacists in the diagnosis and treatment of specific health issues?

- Credentialing e.g. Credentialed Diabetes Educator
- Recognition of expanded role, including prescribing, e.g. SHPA Advanced Practitioner Framework with consistent standards
- Create positions/opportunities within NSW Health and having the ability to refer

Are there any aspects of pharmacy services which could be leveraged commercially or through other pharmacy funding programs?

- Chemotherapy
- Discharge/PBS, public/private collaboration
- Transition Pharmacy Services
- Funding university student placement
- Home Management Review – 'In-reach' into healthcare organisations especially specialist clinical groups
- Centralised aseptic/external manufacturing

What are the possible implications for the pharmacy workforce regarding the changes to prescribing rights of your professions?

- Increased career paths/expanded roles
- Improved accuracy/documentation
- Improved continuity of care

- Increased efficiencies
- Safer prescribing
- Protocol driven
- Enhanced levels of Increased recognition
- Increased pay.

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10 Appendix A: Key Word Search

The following key words used during the literature review search:

Service quality

Patient-centric, client-centred, family centred and centered

Home, community, acute, rehabilitation, hospital

Model of care, model of delivery, interdisciplinary, integrated

ABF, casemix, activity based funding

e-health, electronic health records, clinical decision support, robotic, PCOE

Geographic distribution

Training, credentialing, registration, accreditation

Unmet needs, service gaps, opportunity(ies)

Accessibility

Workforce, recruitment, retention, incentive

Risk, benefit

Indications

Drivers

Emerging issues

Scope of practice, role design, service delivery, expanded, expanding

Allied

Aboriginal

Schedule 2, Schedule 3, Schedule 8

11 Appendix B: Stakeholder Listing

Table 3: Stakeholders consulted

Name	Position	LHD/Organisation
Jennifer MacDonald	Pharmacist	HNELHD
Ms Veronica Murdoch	Pharmacist	ISLHD
Donna Blomgren	Chief Pharmacist	JH&FMHD
Mr John Carroll	District Chief Pharmacist, MLHD Pharmacy Services	MLHD
Ms Ruby Samson	Director of Pharmacy, Pharmacy Lead Clinician	NBMLHD
Ricky Che	Pharmacist	NNSWLHD
Ms Hediyeh Vahdat	Pharmacist	NSLHD
Peter Barclay	Pharmacist	SCHN
Ms Rosemary Burke	Director of Pharmacy Concord Hospital	SLHD
Gabrielle Couch	District Pharmacist, MHDA Pharmacist	SNSWLHD
Carmen Ng	Pharmacy Department	St Vincent's Hospital
Linda Hotong	Pharmacy Department Manager - Clinical Trials	St Vincent's Hospital
Ms Lucy Nair	Director of Pharmacy Bankstown Hospital	SWSLHD
Melissa Tao	Pharmacist	WSLHD
John Merrick	Director Allied Health	HETI
Johneen Tierney	Director of Pharmacy	SESILHD
Gail Johnson	Technician	SESILHD
Mark Macisaac	Technician	SESILHD
Richard Cheney	Chairperson	Directors of Allied Health Advisory Forum
Terry Melocco	Chairperson	NSW Health Allied Health Network (Pharmacy)
Helen Dowling	Chief Executive Officer	The Society of Hospital Pharmacists of Australia
Karen Leary	Policies and Project Manager	The Society of Hospital Pharmacists of Australia
Dr Stephen Carter	Associate Lecturer	University of Sydney, Faculty of Phamacy

12   Appendix C: Approved Programs of Study

Table 4: Approved programs of study

Provider	Program name	Duration (years)
Charles Darwin University	Bachelor of Pharmacy	4
Charles Sturt University	Bachelor of Pharmacy	4
Curtin University	Bachelor of Pharmacy	4
Curtin University	Master of Pharmacy	2
Griffith University	Bachelor of Pharmaceutical Sciences- Master of Pharmacy	4.5
Griffith University	Bachelor of Pharmacy	4
Griffith University	Master of Pharmacy	2
James Cook University	Bachelor of Pharmacy	4
La Trobe University	Bachelor of Pharmacy	4
Monash University	Bachelor of Pharmacy	4
Queensland University of Technology	Bachelor of Pharmacy	4
RMIT University	Bachelor of Pharmacy	4
The University of Western Australia	Master of Pharmacy	2
University of Auckland	Bachelor of Pharmacy	4
University of Canberra	Bachelor of Pharmacy	4
University of Canberra	Master of Pharmacy	2
University of New England	Bachelor of Pharmacy	4
University of Newcastle	Bachelor of Pharmacy	4
University of Newcastle	Master of Pharmacy	2
University of Otago	Bachelor of Pharmacy	4
University of Queensland	Bachelor of Pharmacy	4
University of South Australia	Bachelor of Pharmacy	4
University of Sydney	Bachelor of Pharmacy	4
University of Sydney	Master of Pharmacy	2
University of Tasmania	Bachelor of Pharmacy	4
University of Tasmania	Bachelor of Pharmacy (mid-year entry)	3.5
University of Technology Sydney	Master of Pharmacy	2

Source: (Australian Health Practitioner Regulation Agency, 2013)

NSW Ministry of Health

Workforce Planning & Development Branch

Addendum to the Selected Allied Health Professions Horizon Scan

Pharmacy Workforce

July 2017

13 Addendum Introduction

The 2015 Selected Allied Health Professions Horizons Scan examined the potential workforce implications of the likely future developments in the health landscape for the pharmacy Allied Health Profession.

The pharmacy workforce was considered through a desktop review of the international literature, a series of interviews with senior stakeholders, an online survey to identify key issues and a 'Scenario Development' workshop. The outputs of these activities are detailed within the Pharmacy Horizons Scanning report.

This addendum provides a validation review, completed in July 2017, of the Pharmacy Horizons Scanning report submitted to the Ministry of Health Workforce Planning and Development Branch in 2015. The intention of the addendum is to highlight any gaps/issues which may have emerged for the pharmacy workforce since the original review was undertaken in 2015.

13.1 Statistical data constraints

In 2015 the Australian Institute of Health and Welfare (AIHW) was the data custodian of the National Health Workforce Data Set (NHWDS). The AIHW's contract expired on the 30th June 2016 and the Department of Health assumed custodianship of the NHWDS on 1st July 2016. At the time of this validation, the statistical data for the period 2016-2017 was unavailable on the Department's website. The statistical data was primarily sourced from the Pharmacy Board of Australia. Statistical comparison will only be conducted on available matching datasets.

14   2017 Validation review of the pharmacy workforce

A refreshed literature review was undertaken in order to identify any new literature pertaining to the pharmacy workforce. Where new or updated literature was identified a summary has been included below.

14.1   Workforce characteristics

Data provided by the Pharmacy Board of Australia in December 2016 (Pharmacy Board of Australia, 2016) confirms that:

- There were 30,368 registered pharmacists in Australia.

- The pharmacy workforce was approximately 61.6% female and 38.4% male.

- 28% of the pharmacy workforce was aged under 30 years and 16% was aged 55 years or older.

There was a slight increase in the number of registered pharmacists compared to the data contained in the 2015 report, however the other observable characteristics and distributions were similar.

As per the Public Service Commission (PSC) Workforce Profile data 2016, the number of Aboriginal pharmacists in NSW Allied Health was four (4) as compared to approximately 931 non-Aboriginal pharmacists. (NSW Public Service Commission, 2016).

14.2   Professional bodies and associations

A review of the pharmacy professional bodies and associations identified in the 2015 Horizons Scanning Report was conducted and no changes to the membership list was observed. For the Pharmacy Guild of Australia and The Society of Hospital Pharmacists Australia it was not possible to verify the membership fees associated.

14.3   Additional key drivers for demand for pharmacy services

There was a notable increase in the demand for pharmacy services due to demographic changes and new professional opportunities (Jackson, et al., 2016). This increase in demand was articulated in the 2015 report and this more recently published literature corroborates that view.

14.4   Additional key drivers of supply for pharmacy services

The refreshed literature review reiterates the findings from the original 2015 Horizons Scanning report in relation to the key drivers of supply for pharmacy services.

There was an emphasis on addressing workplace factors and workloads to enhance the functions of pharmacists to improve their career paths and utilisation of their expertise (Jackson, 2016).

Constraints to the workforce supply included uncertainty regarding the future, levels of remuneration, limited career development prospects and lack of professional acknowledgment (Jackson, 2016). There has been an increase in pharmacy graduates since 1997, with an observable tripling in the number of graduates from Australian Pharmacy schools as well as an increase in overseas trained pharmacists (Jackson, et al., 2016).

A study was conducted to better understand the pharmacy technician work-life and the motivators that drive the pharmacy technician workforce (Desselle, 2015). It was noted that the four common themes that drove the supply for pharmacy technicians were:

- career impetus
- job responsibilities
- quality of work life
- equitable partnership.

A study within the United Kingdom identified that the challenges encountered by pharmacists included lack of time to perform their role, isolation and negative views regarding the pharmacy workplace settings (Cooper & Tsoneva, 2016).

In addition to the 2015 findings, the pharmacy technician role needs to be explicit and have a well-defined scope, role responsibility and career laddering mechanism (Desselle & Brown, 2017).

14.5   Challenges and opportunities for pharmacy

Despite the increasing number of pharmacy graduates in Australia, there is still a continuing challenge for recruitment in rural and remote areas (Jackson, et al., 2016). To fill the shortage of pharmacy staff, there are instances where other professions such as nurses were required to up skill to perform the role (Koehler & Brown, 2017).

Whilst there is an increase in the number of pharmacy graduates in Australia, some graduates have displayed limited understanding of pharmacy practice that was not inclusive of overall care, communications and education to patients (Burrows, et al., 2016). It was noted that the work environment during studies played a key role in developing the student's understanding of the pharmacy practice. The notion of insufficient formal or structured experiential training programs post-registration has been a barrier to the strengthening and expansion of pharmacists' roles and scopes of practice (Michaels, 2016).

There is further evidence to support the potential participation of the pharmacy workforce within integrated patient-centric models of care. It was noted that out-patient care services, including community services and lack of team-based delivery of optimal care to patients (Smith & Ferreri, 2016). As stated previously, there is an opportunity to further develop models of care to include interprofessional team-based care. Challenges previously identified in the 2015 report were reiterated whereby it was identified that there should be an emphasis on the benefits of interprofessional communication skills between pharmacists and other health professionals (Luetsch & Rowett, 2016). However, in order to optimise the potential of the health system, future policy decisions must consider the impacts of change at a micro, meso and macro levels in a holistic manner (Hermansyah, et al., 2016).

It has been suggested that formalised advanced pharmacy practice may be beneficial to manage increasingly complex patient services and demanding healthcare needs (Galbraith, et al., 2017). It has been recommended that the Australian action on practitioner development be largely aligned with international goals. Compared to other countries, Australia has a pharmacy support workforce supervised directly by the pharmacist or via delegated methods (Koehler & Brown, 2017).

One example of an emerging patient centred model of care in NSW is the Leading Better Value Care Program. Commencing in 2017/18 the NSW Health system will refocus - away from the traditional approach of measuring value in terms of volume/output in relation to costs, to

measuring value in terms of the Institute for Healthcare Improvement Triple Aim of health outcomes, experience of care and efficient and effective care (in relation to costs). In this context, health outcomes are defined as the outcomes that matter to patients (NSW Health, 2017).

NSW Health's Integrated Care Strategy also aims to provide a patient-centred model of care through seamless, effective and efficient care that reflects the whole of a person's health needs; from prevention through to end of life, across both physical and mental health, and in partnership with the individual, their carers and family (NSW Health, 2017).

The NSW Health 'Whole of Health Program' (WOHP) is a centrally facilitated but locally led program which aims to improve access to care for patients across NSW. It began as the Whole of Hospital Program in February 2013 to drive the local change needed to improve patient delays, with NSW having fallen short of the 4-hour Emergency Department (ED) target (previously National Emergency Access Target or NEAT) in 2011 and 2012 (NSW Health, 2016). Through improvements in patient accessibility, this could increase the demand for services.

14.6   Additional areas of interest

In addition to the demand and supply drivers identified and explored, a number of key emerging areas of interest for the allied health professions were considered through the validation review process which may impact the pharmacy workforce.

14.6.1   Impacts of ICT including eHealth and NSW ICT strategies

eHealth NSW initiatives for 2016-2026 (NSW Health, 2016) identify that there are five key drivers for change in patient interaction with technology as follows:

- Technology is strengthening patient knowledge, allowing them to be increasingly empowered, health literate and engaged as partners in their healthcare and wellness

- There is an increasing demand for healthcare workers and pressure to address shortages of skilled health workers, predominantly in regional and rural communities

- The emergence of integrated care models means there is a need to provide seamless, effective and efficient partnering with the patient, their carers and family. Technology must be more successfully harnessed to do this

- Rapid development and adoption of technology innovations has created opportunities within the home, hospital and community care settings

- There is a move toward open information and transparency across government agencies contributing to an improvement in data quality and analytics which assist in delivering greater care across communities and industries (NSW Health, 2016).

Technological developments within integrated care include HealtheNet, a central clinical repository providing a state-wide view of clinical history and seamless information-sharing between hospitals, community health, GPs, patients and private clinicians. This provides a framework to promote transparency and sharing of individual patient data between providers across the state. Additional eHealth Integrated Care solutions include a secure messaging and eReferral management system as well as shared care planning tools. These technological solutions have the potential to support patient-centred models of care and promote pharmacy involvement in delivering care that spans across the longitudinal view of the patient's journey.

The Community Health and Outpatient Care (CHOC) electronic medical records program was a 7-year state-wide Integrated Clinical System program that has been implemented across eight services (including Aboriginal Health, Aged and Chronic Care and Mental Health) in NSW

community health. Leveraging both Cerner's ability to provide information integration across a wide range of care settings and the CHIME solution, a platform that was specifically designed for community health to various Patient Administration Systems and aims to create a 'single patient view'. The CHOC program aims to provide clinicians across multiple sites with timely access to clinical information.

The eMR Connect Program aims to deliver a state-wide, comprehensive electronic medical record (eMR) and is an integral component of eHealth NSW's Strategy for NSW Health:2016-2026's integrated care solutions. The Integration of clinical systems within the various Local Health Districts and community health systems including CHOC is essential to the vision of the eHealth NSW Integrated Care Solutions Strategy.

From a workforce planning and management perspective, solutions such as the integrated Human Capital Management Suite could potentially support the recruitment and retention process of the workforce via standardisation of processes across the state. In addition, this could provide data to enrich predictive workforce models that in turn will assist in future workforce planning.

NSW Health have established a state-wide system for Asset and Facilities Management that aims to improve the capacity to deploy, track, manage and maintain clinical and non-clinical assets. Centralised repositories have the potential to assist the pharmacy workforce, particularly with managing equipment in rural and remote areas.

14.6.2 Rostering best practice

Workforce rostering is a factor that influences pharmacy and the broader health workforce. Health services that operate seven days per week are under pressure to show the increased cost of providing weekend services can be measured in improved patient outcomes. A qualitative study was undertaken whereby managers perceived that a seven-day operational week improved patient flow and quality of care and reduced adverse incidents, such as falls and intensive care admissions (Mitchell, et al., 2017). It was noted that there are challenges associated with planning, staffing and management of seven day services, mainly due to change resistance from a workforce that has traditionally operated during traditional working hours. Strategic human resource planning should be considered to ensure the pharmacy workforce can provide adequate levels of patient care within a seven-day operational week.

14.6.3 Addressing the health needs of the broader Aboriginal and Torres Strait Islander communities

Pharmacy and the allied health professions should examine its ability to address the health needs and deliver appropriate levels of care to Aboriginal and Torres Strait Islander people.

Peer mentoring was identified as a "powerful tool for two-way learning to promote practice improvement". When an organisation was found to have put in place sufficient levels of management support and training for non-Aboriginal and Torres Strait Islander staff and where they partnered closely with Aboriginal Health Workers (AHWs), there was evidence of an increased readiness to learn and adjust practice to deliver services in a more culturally appropriate manner. This increase in cultural awareness may in turn have a positive impact on the health outcomes of Aboriginal and Torres Strait Islander people.

The Aboriginal and Torres Strait Islander view of health is not just about the physical wellbeing of the individual. It is the social, emotional and cultural wellbeing of the entire community, a concept that is often overlooked by mainstream health services. It is therefore unsurprising that mainstream health services do not secure the trust to provide effective access and care to Aboriginal and Torres Strait Islander people.

Recognition of spirituality as a critical factor in Indigenous well-being can contribute to the development and implementation of health promotion and preventative projects. The pharmacy profession should therefore adopt and embrace culturally responsive practices and trauma-informed services.

Stakeholder engagement undertaken with Indigenous Allied Health Australia in 2017 identified that the geographical distribution of the pharmacy workforce is just as important as the size of the workforce. Supporting the concept of a holistic model of care, design around implementing 'central hubs' within the communities is of key importance. As Aboriginal and Torres Strait Islander communities possess unique cultural characteristics, specialised models must be designed and developed around the community values themselves.

There is a view that specialised models should be developed by Aboriginal and Torres Strait Islander people and that evidence based models should form the foundation for designing these specialised models of care. Through a combination of leadership, development, mentoring and inclusion the health needs of the Aboriginal and Torres Strait Islander people can be addressed. Stakeholders acknowledged that there should be a process of respectful consultation with the Aboriginal and Torres Strait Islander community on how services should be delivered. The concept of a cultural navigator was identified as one role that could significantly enhance the current pharmacy service offering to Aboriginal and Torres Strait islander communities.

The encouragement and support of Aboriginal people to patriate in the profession of pharmacy is key aspect to promoting improved health needs of the broader Aboriginal and Torres Strait Islander communities. Through stakeholder consultation, it was noted that Aboriginal students and graduates were strongly driven to contribute back to their communities. The provisioning of appropriate support and availability of placements for these students is pivotal.

Aboriginal graduates should be supported with future employment in areas that have cultural connections and supports. Career progression from the role of allied health assistants to allied health professionals was a 'natural' transition. It was identified that adequate support for participation of Aboriginal people within the workforce was a key driver.

14.6.4 Impacts of the National Disability Insurance Scheme (NDIS)

The rollout of the NDIS may have an impact upon the pharmacy workforce and the services it delivers. It is anticipated there will be an increasing number of service providers working in remote Indigenous communities over the next few years, with the progressive rollout of the NDIS. To provide culturally appropriate, evidence based services, it is essential for individuals and organisations to understand the meaning, barriers and enablers of participation for children and families in remote areas (O'Kearney, et al., 2015).

The intensity and range of supports required by many people with intellectual disabilities and complex support needs translates into the need for commensurate support services. This raises several workforce issues relevant to both the profile of worker skills and the mechanisms through which these skills might be developed and maintained. Workforce planners face the challenge of ensuring both specific (depth) skills in specialist support areas such as behaviour support, as well as generalist (breadth) skills in areas such as service coordination and cross-disciplinary or cross-sector communication, or both (Dowse, et al., 2016).

Given that healthcare systems and associated services are becoming increasingly consumer driven there may be a requirement for pharmacists to become more responsive to specific consumer need and emerging policy directions that seek to meet consumer need and expectation. The pharmacy workforce may need support to navigate these new working environments and ways of working.

15   Conclusion

This validation review concludes that the findings of the 2015 Pharmacy Workforce Horizons Scanning Project remain valid and fit for purpose. It is clear that the majority of literature published since 2015 supports the original findings, while a smaller subset of research further expands on / enhances the themes identified in the 2015 work. In only a few cases were new elements detected, however we consider that these additional findings are complementary to the earlier work as no new, distinct workforce drivers have emerged as a result.

These areas include NSW ICT strategies including eHealth NSW initiatives, patient-centric integrated models of care and further opportunities to address the broader health needs of the Aboriginal and Torres Strait Islander communities.

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