



PHARMACY  
FORECAST  
AUSTRALIA  
2021

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JUNE 2021



PHARMACY FORECAST AUSTRALIA PARTNER

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## 2. FOREWORD

The Society of Hospital Pharmacists of Australia (SHPA) is pleased to present the inaugural *Pharmacy Forecast Australia 2021*. The impetus for developing this document arose from the success of the American Society of Health-System Pharmacists's (ASHP) *Pharmacy Forecast* which, over the past decade, has grown to become a key feature of the society's educational landscape. It has become a much-anticipated annual publication used by multiple pharmacy practice sectors as a tool to anticipate and plan for future demand, service provision and leadership.

*Pharmacy Forecast Australia 2021* is a new strategic thought leadership piece on emerging trends and phenomena forecasted to impact pharmacy practice and the health of Australian patients to 2026 developed by SHPA utilising 'wisdom of crowds' methodology. It is anticipated that *Pharmacy Forecast Australia 2021* will help equip hospital pharmacy departments to proactively position themselves and their teams for potential future events and trends with contextualised recommendations by the report's authors.

*Pharmacy Forecast Australia 2021* is a stimulant to prompt discussion that assists health system leaders in their strategic planning efforts, in their mission to provide optimal care for patients and advancing the profession of pharmacy. As a process and an output, the Forecast sits adjacent to SHPA's advocacy activities and membership frameworks. This important distinction befits the unique methodology with the themes' questions, analysis and recommendations distilled directly from leading hospital pharmacists and their colleagues based on their experiences in a range of roles, covering all Australian jurisdictions and unrestrained by organisational limitations.

It is anticipated the value of the report will be found through its use by pharmacy practitioners and pharmacy leaders to inform strategic planning. The unique methodology is by no means intended to either qualitatively or quantitatively predict future events. Rather, the report should be used as a prompt to stimulate discussion, informed by the themed analysis provided by Australian subject matter experts and including associated recommendations.

*Pharmacy Forecast Australia 2021* presents current and future challenges to hospital pharmacy care provision, identified by a broad cross section of the Australian landscape. The report is divided into six themes: **Workforce of the future**, **Workforce resourcing**, **Reliability of supply**, **Medication complexity and access**, **Medication safety** and **Electronic revolution**. While many of the identified themes will not be surprising to the reader it is anticipated the recommendations will provide sound advice and guidance on how to approach issues common to many such as: addressing barriers to new clinical initiatives; investing and developing the pharmacy technical workforce; unifying efforts to fortify procurement; centralising medication safety in workforce planning; and maximising the benefits offered through electronic systems and telehealth.

It may be that not all will agree with the opinions and recommendations of the Forecast Panellists and theme authors. This is to be expected and, indeed, hoped for as it will generate constructive debate, one of the objectives in creating the report.

**Russell Levy**

Chair, Pharmacy Forecast Advisory Committee

### 3. INTRODUCTION AND METHODS

Pharmacy leaders are faced with wide ranging challenges; forecasting future events is an important exercise that can help leaders create well-informed strategic plans.

Pharmacy Forecast Australia 2021 is intended to assist pharmacy and health system leaders in this effort.

#### AN ITERATIVE PROCESS

In its inaugural year in Australia, the method used to develop the 2021 Pharmacy Forecast Australia was similar to the approach of the ASHP Foundation's Pharmacy Forecast (now in its ninth year of publication).

It draws on concepts described in James Surowiecki's book, *The Wisdom of Crowds*. According to Surowiecki, the collective opinions of 'wise crowds' – groups of diverse individuals in which each participant's input is provided independently, drawing from his or her own locally informed points of view – can be more informative than the opinion of any individual participant.

The Pharmacy Forecast Advisory Committee (see membership list in the Acknowledgements) began developing the survey questions by contributing lists of issues and concerns they believed would influence health-system pharmacy in the coming five years, informed by insight from SHPA's policy and advocacy activities.

That list was then expanded and refined through an iterative process, resulting in a final set of six themes, each with six focused topics on which the survey was built. Each of the 36 survey items was written to explore the selected topics in greater detail.

Survey Respondents – Forecast Panellists (FPs) – were selected by the Advisory Committee after nominations were submitted in conjunction with Theme Leaders (experts selected relative to theme topics that will author the report). Nominations were limited to individuals known to have expertise in health-system pharmacy, knowledge of trends and new developments in the field, and the ability to think analytically about the future.

The Forecast survey instructed FPs to read each of the 36 scenarios presented in survey items and consider the likelihood of those scenarios occurring in the next five years. They were asked to base their responses on their first-hand knowledge of current conditions in their region, not based on their understanding of national circumstances. They were asked to provide a top-of-mind response regarding the likelihood of those conditions being very likely, somewhat likely, somewhat unlikely, or very unlikely to occur.

#### 2021 FORECAST PANELLISTS

It is important to understand the composition and characteristics of the FPs to give validity to the 'wisdom of crowds' method implemented.

Forecast Panellists were selected by Advisory Committee members in consultation with Theme Leaders. Nominations were limited to individuals known to have expertise in health-system pharmacy, knowledge of trends and new developments in the field, and the ability to think analytically about the future.

Responses were received from 59 FPs (an 82% response rate). Representation was captured from across all Australian states and territories, however there was a skew to Vic (27%) and NSW (24%), followed by WA (17%), Qld (12%), and SA (10%), with remaining areas Tas, NT and the ACT sitting below 10% response rates.

Most of the FPs (97%) had been in practice for greater than ten years, and 47% had been in practice for greater than 20 years.

Most FPs held the title of Chief or Director of Pharmacy, all senior titled positions.

Most FPs indicated their primary practice setting / organisation was in the public sector (83%) and (5%) indicated private.

Half of FPs described their primary practice setting / organisation as a metropolitan hospital (51%), while 31% indicated they were from a government/not-for-profit (NFP) department or agency. Regional/rural hospitals saw 12% representation, as did organisations classified under academia.

Forecast Panellists reported their primary practice setting / organisations offered a diverse range of services, including home health or infusion care (49%), specialty pharmacy (78%), in-patient care (78%), ambulatory care (63%), paediatric care (47%), and hospice care (27%).

## **USER GUIDE TO THE PHARMACY FORECAST**

Within each section of this report, the results of each survey question are summarised in detail. The results are discussed, and key strategic recommendations are provided to stimulate strategic planning by pharmacy leaders.

The purpose of the report is to encourage and support active and deliberate strategic planning in hospitals and health systems. It is intended to stimulate thinking and discussion, providing a starting point for individuals and teams who wish to proactively position themselves for potential future events and trends rather than be reactive when they occur.

# 4. PHARMACY FORECAST AUSTRALIA 2021



## 4.1 THEME 1 – WORKFORCE OF THE FUTURE

**Advisory Committee Lead:** Tom Simpson

**Theme Leads:** Margie Butnoris and Sharon Goldsworthy

### INTRODUCTION

Workforce of the Future explores topics relating to skills development focused on the expansion of Pharmacy residencies, formalised competencies for pharmacy technicians and pharmacy leaders and whether Collaborative Prescribing (CP), as an emerging role, will become ‘mainstream’, over the next five years.

### (Q1) COLLABORATIVE PRESCRIBING AS A STANDARD PHARMACIST PRACTICE

During the past decade, the role of pharmacist prescriber has been the focus of multiple studies within Australia. The PBA released a position statement on pharmacist prescribing in 2019<sup>1</sup>, considering three models: 1) structured prescribing arrangement, 2) prescribing under supervision, and 3) autonomous prescribing. The PBA indicated that models one and two fall within the scope of practice of Australian pharmacists.

In the hospital setting, Partnered Pharmacist Medication Charting (PPMC) dominates the discussion regarding pharmacist prescribing, offering the potential to deliver the patient safety benefits of collaborative medication management without requiring significant practice change. Where PPMC has been introduced (known to be at least in Vic, Qld, WA, and Tas), it does not appear to have required regulatory change. PPMC yields a 97% reduction in charting error at admission<sup>2</sup>, is validated<sup>3</sup>, and replicated across different practice settings<sup>4,5</sup>. In 2020 SHPA identified PPMC as a key element of advancing medication safety in Australia’s hospitals<sup>6</sup>. As an extension to existing practices and skills, it is expected that adoption will grow markedly over the next five years.

Despite this, and with consideration to 2026 – a date seven years beyond the PBA publication – only 20% of FPs identified that CP would very likely form part of a standard model of care. The FPs were almost identically spread (37% and 36% respectively) in believing this would be ‘somewhat likely’ versus ‘somewhat unlikely’ in their health service (Figure 1, Item 1). These results indicate a conservative uptake of CP. Although at least four states have piloted or deployed PPMC, it is probable that pilot sites are limited, and thus many pharmacists (including FPs) are inexperienced in its implementation. This likely contributes to the uncertainty of responses.

With CP as a key national medication safety priority, pharmacy leaders must now rise to the implementation challenge. SHPA must also consider its role in standardising models, integrating PPMC into practice standards and supporting nationally recognised (and reciprocal) credentialling. With the position defined, evidence unequivocal and accumulating, the challenge is to defy the forecast.

1. Pharmacy Board of Australia. Position Statement on Pharmacist Prescribing. Accessed at: <https://www.pharmacyboard.gov.au/news/professional-practice-issues/pharmacist-prescribing-position-statement.aspx>
2. Tong EY *et al.* Multi-site evaluation of partnered pharmacist medication charting and in-hospital length of stay. *Br J Clin Pharmacol.* 2020;86(2):285–290.
3. Sinclair VL *et al.* Validating the Victorian Partnered Pharmacist Charting Model in the Western Australian Setting. *J Pharm Prac Res.* Early access published 28 Sept 2020; <https://doi.org/10.1002/jppr.1682>.
4. Tran T *et al.* Pharmacist-assisted electronic prescribing at the time of admission to an inpatient orthopaedic unit and its impact on medication errors: a pre- and postintervention study. *Ther Adv Drug Safety.* 2019;10:1–10.
5. Taylor S *et al.* Collaborative doctor-pharmacist prescribing in the emergency department and admissions unit: a study of accuracy and safety. *J Pharm Pract Res.* 2019;49(2):176–178.
6. [https://www.shpa.org.au/sites/default/files/uploaded-content/website-content/Fact-sheets-position-statements/shpa\\_medication\\_safety\\_position\\_statement\\_sep2020.pdf](https://www.shpa.org.au/sites/default/files/uploaded-content/website-content/Fact-sheets-position-statements/shpa_medication_safety_position_statement_sep2020.pdf)

## **(Q2) LEADING THE PHARMACY WORKFORCE**

Sixty-eight per cent of FPs (Figure 1, Item 2) were at least somewhat optimistic that half of pharmacy leaders will have received relevant training, ongoing mentoring and competency in leadership.

In response to expressed demand, SHPA has progressively expanded support for leadership professional development, however the lack of uptake of some offerings has led to cancellations or modified programs. This contrasts with the non-leadership SHPA seminars and workshops which enjoy robust subscription.

The inconsistency between expressed desire for and uptake of leadership training reflects this misalignment, with 82% of FPs indicating uncertainty (Figure 1, Item 2). There are no nationally agreed leadership and management educational requirements for pharmacy leaders in Australia, although many positions have a requirement for unspecified higher qualifications for higher classification roles. The National Competency Standards Framework for Pharmacists in Australia identifies leadership and management as a separate domain providing a framework for individual goal setting and professional development planning.

A multitude of relevant leadership and management development tools and training are available from hospitals, jurisdictions, and higher education organisations. These predominantly are non-pharmacy specific, potentially yielding the advantage of a diversity of content and delivery, but are unlikely to be accredited continuing professional development (CPD).

Pharmacy specific leadership and management development is offered by SHPA through multiple mediums for both pharmacist and technician members, including the annual leadership boot camps, mentoring program, executive coaching and regular seminars and webinars. An Advanced Training Residency (ATR) in Pharmacy Leadership and Management has been implemented in Tasmania, and SHPA is likely to develop a national ATR program in the next two years, which may prove to be the future pathway to advance a leadership and management career for the pharmacist workforce.

## **(Q3 & Q4) EXPANDING THE ADOPTION OF PHARMACY RESIDENCIES**

Forecast Panellists were equivocal (Figure 1, Item 3) that base grade pharmacists will have undertaken an SHPA Foundation Residency and indicated the strongest disagreement of all questions in this section of the Forecast regarding specialist pharmacists having undertaken an ATR or other credentialing program in their specialty (Figure 1, Item 4).

The role of the pharmacist is expanding into more cognitively advanced areas of practice as the advancement of the technician workforce and automation effects are realised. It is necessary to support the workforce to build the skills and knowledge as complexity of care increases across all areas of practice.

A two-year Foundation Residency Program model was launched by SHPA in 2016 with 27 sites seeking accreditation, and the uptake of residencies has been increasing year on year. However, the expansion of sites progressing to accreditation has diminished to only 0–2 per year. Given the importance of Foundation Residencies in developing early career practitioners as part of the ‘first 1000 days of practice’, it will be important to understand what barriers are preventing further adoption.

Advanced Training Residencies commenced in 2020, and 16 sites sought accreditation to provide ATRs in Cancer, Cardiology, Education, Electronic Medicines Management, Emergency Medicine, General Medicine, Infectious Diseases, Mental Health, Neurology, Respiratory, Surgery, Perioperative Medicine, Geriatric Medicine, and Leadership and Management.

Hospital pharmacy has long struggled with the issue of ‘specialisation’, with little in the way of specialist certification or qualifications for many hospital pharmacy specialties. Most specialists’ roles are filled on a chicken-and-egg basis: an ICU pharmacist position should be filled by an ICU pharmacist, but the only way to become an ICU pharmacist is to have filled an ICU pharmacist position.

The development of ATRs represents probably the most important step to date towards a mature model of recognition of specialist practice and skills. Given ATRs are in their early days, the lack of optimism for the



mainstreaming of ATRs in 2026 is perhaps not too concerning; but nevertheless, given the strategic importance of ATRs to our profession, it will be important for barriers to be identified and addressed well ahead of 2026.

## (Q5) AVAILABILITY OF A SKILLED PHARMACY WORKFORCE

The views of FPs were somewhat ambivalent regarding the topic of whether there will be a surplus of candidates for pharmacy roles and if this surplus will constitute ‘appropriately skilled’ candidates. Seventy-eight per cent of responses were uncertain, although within this, a positive perspective was more likely. Definitive responses were twice as likely to be positive than negative (Figure 1, Item 5). The results can perhaps best be summarised as highly uncertain, but optimistic.

There is perhaps good rationale for this. Pharmacist numbers in Australia have grown consistently during the past decade, from 26,434 in March 2012, to 34,922 in December 2020<sup>1</sup>. This rise is met by proportional demand, with pharmacy degrees offering the highest rate of graduate employment<sup>2</sup>. In response, there has been a rapid expansion in undergraduate pharmacist courses, from six degree programs in 1997, to 21 in 2008<sup>3</sup>. In 2019 there were 7,049 undergraduate pharmacy students in Australian universities<sup>4</sup>, suggesting a healthy supply chain of future graduates.

Continuous growth poses a sustainability challenge. A 2016 survey of Australian hospital pharmacists<sup>5</sup> noted that ‘oversupply of pharmacy graduates is a growing concern’. Only 28% of community pharmacists recommend pharmacy as a career<sup>6</sup>. Although hospital pharmacy morale appears higher, with 44% of hospital pharmacists recommending a pharmacy career, reduced community pharmacy morale impacts the willingness of talented people to enter the profession, threatening hospital pharmacist workforce availability.

Perhaps the greatest driver of uncertainty is the concept of ‘appropriately skilled’. Pharmacy lacks a visible, uniform, structured framework for establishing the skills required for the wide variety of hospital pharmacy practice – from specialist clinical roles to roles in policy, medication safety, and digital informatics – and most of these speciality roles are filled based on experience rather than credentials.

The pharmacy workforce is at a nexus of competing factors:

- a large workforce with a ready supply of new entrants (for now)
- record low levels of morale in sectors of the profession
- diversification of practice into a wide range of specialties, but with an unrefined approach to assurance of skills and credentials
- the emerging availability of new tools such as SHPA Foundation Residency to support the development of new-to-practice pharmacists.

Recent adoption of ATRs offers a structured pathway for a limited range of specialties to be recognised, even if the framework is not yet in place to link this with employment opportunities or formal qualifications and reciprocal credentialing pathways.

‘Uncertain but optimistic’ is perhaps therefore an accurate representation of the hospital pharmacy workforce. The challenge for the sector will be in driving further adoption of training and residency programs and linking these with formalised approaches to skills assessment and employment opportunities.

1. <https://www.pharmacyboard.gov.au/About/Statistics.aspx>

2. Quality Indicators for Teaching and Learning: 2020 Graduate Outcomes Survey, accessed at <https://www.qilt.edu.au/qilt-surveys/graduate-employment>.

3. Marriot JL *et al*. Pharmacy Education in the Context of Australian Practice. *Am J Pharm Ed*. 2008 Dec 15; 72(6):131

4. Shesthtyn Paola. How do Pharmacy Schools Compare? *AJP Online* 5 Oct 2018, accessed at: <https://ajp.com.au/news/how-do-pharmacy-schools-compare>.

5. Taylor HT, Kyle G, Cheong L. Pharmacists’ perceptions of career options in Australia. *JPPR* 2018; 48(3):212–221.

6. Professional Pharmacists Australia. Community and Hospital Pharmacists Employment and Remuneration Report 2019–20. Accessed at: [http://members.professionalsaustralia.org.au/documents/ppa/2021Community\\_and\\_Hospital\\_Pharmacists\\_Remuneration\\_Report.pdf](http://members.professionalsaustralia.org.au/documents/ppa/2021Community_and_Hospital_Pharmacists_Remuneration_Report.pdf).

## (Q6) PHARMACY TECHNICIAN QUALIFICATIONS AND CERTIFICATION

The expanding and advancing roles of pharmacy technicians (PTs) have long been identified as a strategy which can assist in managing the increasing demand on pharmacy services. However, when optimising the roles of PTs, pharmacists need to be confident in the competency of support staff.

Within the Australian hospital pharmacy setting, the assessment of PT training and competency is largely demonstrated through achievement of a relevant qualification (such as Certificate III). This is reflected in FP responses, with 22% indicating it is very likely that at least 75% of the technician workforce would have achieved, or be undertaking, an appropriate qualification or recognised certification suitable to their role. Forty-seven per cent of FPs indicated that it is somewhat likely, and a minority (24% and 7% respectively) indicated it is somewhat unlikely or very unlikely for this to have been achieved (Figure 1, Item 6).

The SHPA has advocated for the role of the PT in two key publications since 2016: the PT White Paper<sup>1</sup>, and the 'Standard of practice in utilisation of Pharmacy Technicians to support Clinical Pharmacy services'<sup>2</sup>. Similarly, the International Pharmaceutical Federation (FIP) published a global report<sup>3</sup> which described the emerging practice of PTs and their contribution to the pharmacy workforce collectively moving towards an advancing scope of practice. The results of the forecast are optimistic and suggest that ten years on from the White Paper the current outstanding recommendations will be adopted and implemented.

The results of the forecast are clear: there is recognition of the requirement by 2026 to support the education and training of PTs to facilitate an advancing scope of practice of the pharmacy workforce as a whole. The challenge ahead will be for pharmacy leaders to ensure the outstanding national actions are reviewed, refined, and implemented to support the expectations of a future pharmacy workforce.

1. SHPA. Exploring the role of hospital pharmacy technicians and assistants to enhance the delivery of patient-centred care: A White Paper on the findings and outcomes of the 'Pharmacy Technician and Assistant Role Redesign within Australian Hospitals (Redesign) Project'. Nov 2016, accessed at: [https://www.shpa.org.au/sites/default/files/uploaded-content/website-content/final\\_tech\\_redesign\\_white\\_paper\\_november\\_revision.pdf](https://www.shpa.org.au/sites/default/files/uploaded-content/website-content/final_tech_redesign_white_paper_november_revision.pdf)
2. Bekema *et al.* Standard of Practice for Pharmacy Technicians to support Clinical Pharmacy Services.
3. Koehler T and Brown A. A global picture of pharmacy technician and other pharmacy support workforce cadres. *Research in Social and Administrative Pharmacy*. 13-(2017):271–279.

## CONCLUSION

Responses to the survey questions relating to the Workforce of the Future were overall highly uncertain. The only matter considered highly likely was the adoption of formal qualifications across the PT workforce.

Less certain was whether the workforce would be available in sufficient numbers, or whether the workforce would adopt formalised training to support skills development of junior pharmacists and specialist pharmacists. There is, however, a high degree of optimism that pharmacy leaders will have undergone formal training and competency assessment in leadership.

Regarding the duties carried out by the workforce of the future, collaborative prescribing was chosen as the most important emerging practice for surveying, given its recent endorsement by SHPA in its medication safety position statement<sup>1</sup> (September 2020). Responses to this question were disappointingly uncertain given the recognised importance of this practice.

Despite the high level of uncertainty in responses, it does appear there is guarded optimism towards the availability of a skilled and available workforce at all levels of pharmacy practice that is operating at the top of its scope of practice.

1. [https://www.shpa.org.au/sites/default/files/uploaded-content/website-content/Fact-sheets-position-statements/shpa\\_medication\\_safety\\_position\\_statement\\_sep2020.pdf](https://www.shpa.org.au/sites/default/files/uploaded-content/website-content/Fact-sheets-position-statements/shpa_medication_safety_position_statement_sep2020.pdf)

## RECOMMENDATIONS

### 1. Collaborative prescribing

Given it can be adopted without requiring regulatory change, pharmacy leaders should familiarise themselves, their pharmacy teams, and their medical colleagues with PPMC and consider the best means of adopting it into their organisation's processes:

- collectively identify current barriers to adoption at an organisational level
- collectively advocate that regulatory frameworks and professional practice standards and documents reflect scope of practice.

### 2. Leadership competency

Pharmacy leaders should use networks such as the SHPA Management and Leadership Specialty Practice Group to share information about leadership education and training that may be particularly suitable for peers nationally, while reflecting on how they support emerging leaders through the provision of appropriate professional development.

### 3. Residency

Pharmacy leaders should undertake gap analysis for accreditation as an SHPA ATR Program provider and implement pharmacy residencies within their organisation.

### 4. Availability of a skilled workforce

Pharmacy leaders should consider how to promote a career in hospital pharmacy more broadly, as low morale in community pharmacy impacts the general perception of pharmacy as a career and hospital pharmacy is currently only 'visible' for students well into their undergraduate degree when clinical placements occur.

### 5. Pharmacy Technician qualifications

Investment in the ongoing professional development of Australian hospital PTs is required, acknowledging the advancing scope of PTs extends beyond the current technician standard of practice for. A full spectrum of roles, responsibilities and associated competency requirements needs to be documented across the scope of practice and include leadership development.

## PARTNER PERSPECTIVE

### Council of Pharmacy Schools: Australia and New Zealand

Pharmacists contribute to patient care in an increasingly interconnected and interdependent healthcare landscape. Clinical decision making is growing more complex and more diverse despite the exponential growth in new knowledge, the vast amount of data and technological enabled systems to help increase the precision of clinical decisions. As practice evolves we need to consider how we enhance generic graduate capabilities as well as recognise the importance of disciplinary expertise and perspectives.

Technological advances will have far reaching consequences not only at an individual level but also for society more generally and will influence how we communicate. The future of health and healthcare must be person-centred and socially accountable, focussed on maintaining well-being. It should be enabled by digital transformation, increased availability of data, and steered by higher public expectations for accessible healthcare.

Increasingly, to address chronic health concerns, patients require more complex medicines taken over longer periods of time and these current and future trends offer workforce challenges and opportunities to deliver high quality care now and in the future. Because of this, pharmacists and the pharmacy profession have an important and increasing role in ensuring safety and quality. Appraising the evidence base and applying clinical reasoning and professional judgement which optimise outcomes and minimise risk and for the person are core competencies for pharmacists.

Schools of pharmacy are challenged to produce practice-ready and team-ready pharmacy graduates who are not only fit to support safe medicines use today but are also prepared to influence emerging health challenges. The Pharmacy Profession's scope of practice has been defined in the Competency Standards as "Any role, whether remunerated or not, in which the individual uses their skills and knowledge as a pharmacist in their profession. Practice is not restricted to the provision of direct clinical care. It also includes working in a direct, non-clinical relationship with clients; working in management, administration, education, research, advisory, regulatory or policy development roles; and other roles that impact on safe, effective delivery of services in the profession".

The need for pharmacists working closely with patients, their carers and other members of the healthcare team is recognised in our National Medicines Policy, and in the inclusion of Medicine Safety as a National Health Priority Area. A look through the lens of future healthcare and the healthcare system identifies the broader societal need for interprofessional, collaborative healthcare teams where pharmacists play a prominent role in fostering patient-centred care. The future of healthcare demands for interprofessional teams which requires pharmacists to bring their expertise to the team to address the diverse and complex healthcare needs of our society. Successful interprofessional communication enables pharmacists to engage in collaborative practice sharing their skills and knowledge with other health professions and clinicians to influence clinical decisions and enhance outcomes from medicines.

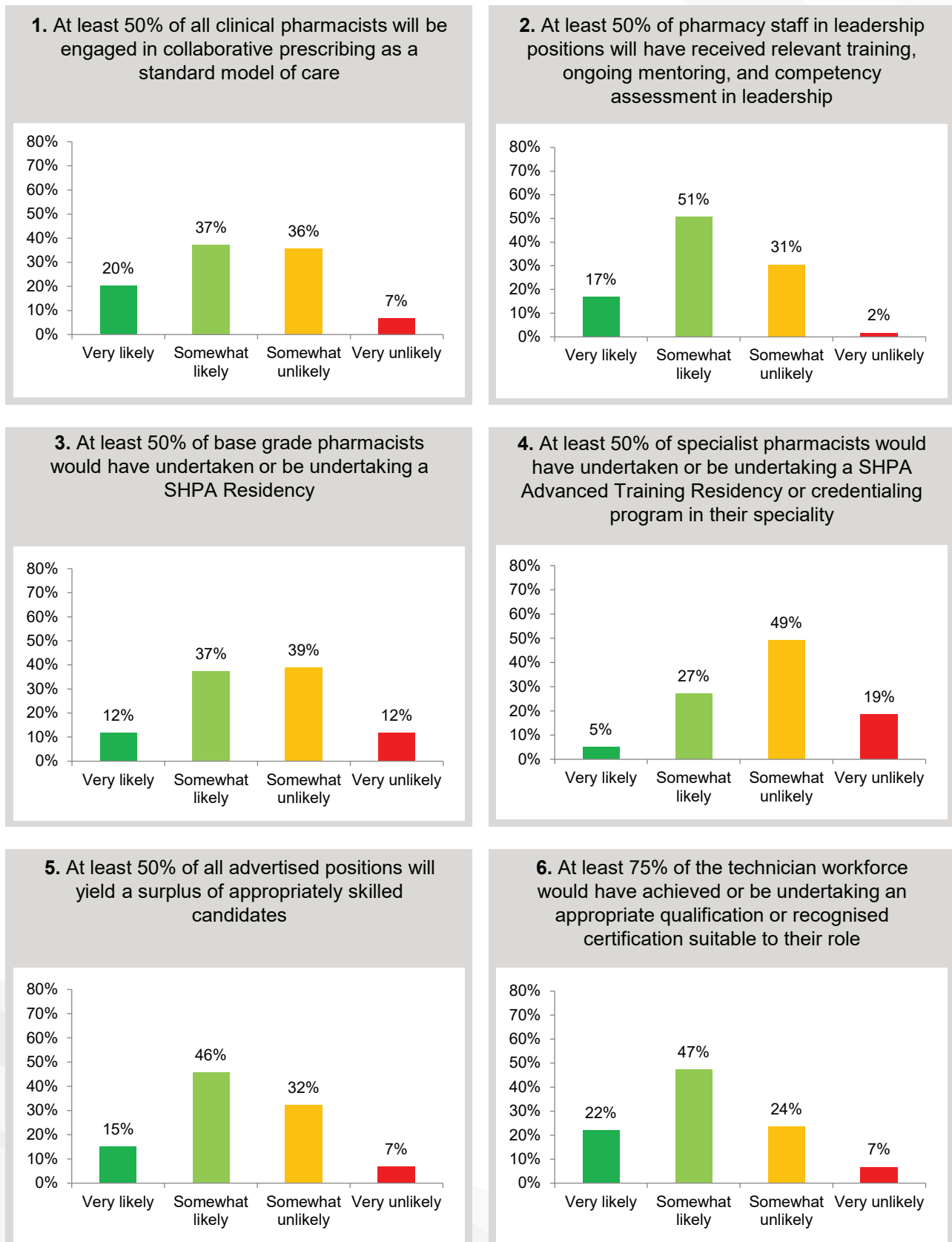
Leadership development is a critical component of programs of study leading to registration and included in the accreditation standards. Leadership is required across the system including development of the technical pharmacy workforce and includes management of financial and human resources, health economics, clinical governance, and health informatics.

**Professor Debra Rowett, President**

**Professor Andrew McLachlan, AM Vice President**

## FIGURE 1. WORKFORCE OF THE FUTURE, SURVEY RESULTS

Forecast Panelists' responses to the question, 'How likely is it that the following will occur by the year 2026 in the geographic region where you work?'





## 4.2 THEME 2 – WORKFORCE ACCESS / RESOURCING

**Advisory Committee Lead:** Russell Levy  
**Theme Leads:** Sue Kirska and Anna McClure

### INTRODUCTION

The trend in healthcare to focus on provision of services in or close to consumers' homes requires a rethink of the way hospital pharmacists are deployed. Pressures on acute care beds and the need to ensure patient flow have led to increased demand for pharmacy services across all seven days of the week.

Significant expansion of the pharmacy workforce across Australia is required for widespread expansion of pharmacy services. Alternatively, widespread uptake of automation, or the enabling of substitute workforces such as pharmacy assistants or technicians, may free up existing pharmacists to focus on providing medication management services.

### (Q1 & Q2) RESOURCING SPECIALISED CLINICAL SERVICES

Forecast Panellists were split on the likelihood of specialised pharmacy services being integrated with multidisciplinary teams universally by 2026 (Figure 2, Item 2), and there was a majority view (70%) that resourcing allocation to provide such services in both admitted and ambulatory care settings was unlikely to be provided (Figure 2, Item 1). This is despite the trend for health services to put significant resources into delivering home-based or non-admitted care.

Policy decisions regarding moving services closer to or within patients' homes to increase access to care and decrease demands on acute services are becoming increasingly apparent. For example, recommendations from the Royal Commission into Aged Care Quality and Safety<sup>1</sup> include increasing access to care within patients' homes to reduce demand for residential care facilities, and to reduce unnecessary admissions to hospital, which lead to deterioration in health and the need to transition to higher levels of care, rather than returning to independent living at home. Recognition of the patient benefits through hospital avoidance facilitated by greater access to health services at home is also supported at state government level. This is attested by the recent Victorian Government budget announcement *Better at Home initiative 2020–2021* which will see more than \$120 million committed over three years to deliver more health care within patients' homes through home-delivered and virtual care<sup>2</sup>.

Models that provide medicines review soon after hospital discharge have been shown to reduce re-admissions. Integration of pharmacists into clinical teams who provide complex care such as in heart-failure and inflammatory bowel disease clinics, where the pharmacist focusses on dose titration and patient education, have improved patient outcomes. Such models can be facilitated by uptake of telehealth to improve efficiency and maintain quality of services provided.

Antimicrobial Stewardship (AMS) services are well embedded into acute care health services. The model, whereby pharmacists work closely with their medical colleagues to provide support for clinicians to make evidence-based prescribing decisions for antimicrobials with built-in audit and feedback to improve adherence to clinical guidelines, is supported by the ACQSHC Standards (Standard 3). Such models are expanding into other high-risk areas such as analgesics and anticoagulants, where pharmacists working with pain specialists, anaesthetists and haematologists are demonstrating that patient outcomes can be improved when these models are deployed.

It is unlikely funding will be provided by health services until such models are recommended in accreditation standards and clinical guidelines. Leadership advocacy, such as that provided by SHPA for analgesic stewardship, will be required across other high-risk areas to assist pharmacy leaders to make the case for such services in their facilities.

1. Royal Commission into Aged Care Quality and Safety; Chapter 4: Program Design, Chapter 9: Better Access to Health Care. Commonwealth of Australia, March 2021.
2. Better At Home initiative. Victoria State Government budget 2020–2021.

### **(Q3) ACHIEVING EFFICIENCIES FROM INTEGRATED DATA SOURCES**

There was significant belief amongst the FPs that continued uptake of electronic medication management (EMM) systems will enable redeployment of pharmacy services to frontline patient care initiatives and clinical services by 2026 (Figure 2, Item 3). There is strong evidence that up-to-date and complete electronic health records, shared across the continuum of care, improve efficiencies for pharmacists.

Australia's National Digital Health Strategy, promoted by the Commonwealth government, establishes a pathway for the evolution of electronic platforms required to deliver on the promise of increased efficiencies through greater incorporation of digital data<sup>1</sup>. The strategic priorities identified have a specific emphasis on achieving integrated systems which ensure that: health information is available whenever and wherever it is needed (strategic priority 1), health information can be exchanged securely (strategic priority 2), and high-quality data with a commonly understood meaning that can be used with confidence (strategic priority 3).

The availability of a current and accurate medication list reduces the time required to compile an admission medication history. Further, it reduces the time spent undertaking medication reconciliation, and simplifies the process of information transfer at the point of discharge. Seamless transfer of information between integrated systems reduces the need for transcribing, with resultant benefits in both patient safety and time efficiency.

New tools built into the design of EMM systems in the workplace are designed to provide clinicians, such as pharmacists, with enhanced capabilities to prioritise those patients most in need of clinical pharmacy services. Future iterations of these tools are needed to enhance their useability so that time gained through easier identification of high-risk patients is not lost navigating complex software and data entry requirements. Moves toward closed loop medication management systems will create efficiencies for the future workforce through enhanced patient safety and improved stock management, however significant hurdles to its implementation must first be addressed<sup>2</sup>.

While the My Health Record platform is growing, FPs are cognisant of the ultimate safety and efficiency benefits able to be realised with its broad uptake.

1. Australia's National Digital Health Strategy; Framework For Action, July 2018.
2. Closing the loop of medication management in hospitals to improve patient safety with barcoding technology on unit dose packaging. Society of Hospital Pharmacists of Australia, position paper June 2016.

### **(Q4) PROVIDING TAILORED SERVICES EVERY DAY**

The near even split of FPs' perception regarding this topic demonstrates the diversity of opinion on the feasibility and need for seven days per week clinical pharmacy services in health care facilities (Figure 4, Item 4). Since the advent of EMM, the profile of pharmacists has arguably risen, with recognition from all sectors of the inherent value of clinical pharmacy in providing education and safety to patients and other members of the healthcare team. The essential functions of pharmacy which are embedded into EMM platforms necessitates greater availability of both operational and clinical pharmacy services to obtain the improvements in patient safety and outcomes promised by these systems.

Significant expansion of the availability of pharmacy services will require strong leadership to identify industrial and cultural barriers to align hours of operation with the times that pharmacy services are most required. The existing bed-to-pharmacist ratios currently provide little guidance on the areas where expanded hours of operation into the evening and across weekends would provide the most impact.

As demand to ensure acute health services provide safe, quality, and efficient services increases, there is also increasing recognition for the need for consistent pharmacy services across all days of the week. Outdated enterprise bargaining agreements that restrict or make the deployment of pharmacists over weekends or after 'so called' business hours inefficient, inhibits the expansion of pharmacy clinical services. Opportunities to embed pharmacists into clinical teams and provide models of care in which they consistently contribute their expertise in medicines management at any time required are inhibited by limitations to the hours in which pharmacists are available to provide such services. For pharmacists to be embedded into code (MET, Code Blue and Stroke) teams they need to be present whenever these codes are called. Electronic medication

management systems that allow for orders to ‘auto-verify’ as a workaround for unavailability of a pharmacist or pharmacy technician to review an order and verify it before administration perpetuate the current system. In other international jurisdictions, all orders must be verified by a pharmacist prior to administration. This process comes with its own set of benefits and limitations in that while all orders are reviewed, often the pharmacist is removed from valuable face-to-face interactions with health care teams and the opportunistic interventions this frequently yields.

## **(Q5) AUTOMATION BUILT INTO DESIGN**

The likelihood that sophisticated pharmacy specific automation would be built into the design of all new sites and redevelopments was a question that FPs responded to with a high degree of agreement, where 76% of FPs agreed, stating they thought this was likely (Figure 2, Item 5).

Automated technologies for pharmacy distribution services are increasingly demonstrating their value in terms of security in storage, efficiency (both in space and human resources), and medicines safety. Responses from FPs demonstrate a sound understanding of these benefits, as well as the critical role that automated medicines technologies play in implementing closed-loop medication management. Pharmacy automation in Australia is still evolving, however the relatively lower incorporation of these technologies relates more to the requirement for significant upfront capital investment and facility redevelopment rather than to any question of their worth. The Australasian Health Facilities guidelines<sup>1</sup> are frequently used as a basis in all new facility developments and make detailed reference to pharmacy specific robotics and use of automated drug cabinets in functional design briefs and schedules of accommodation.

1. <https://healthfacilityguidelines.com.au/> HPU 560 Pharmacy Unit.

## **(Q6) PHARMACY TECHNICIANS’ EXPANDED PRACTICE GAINS**

Forecast panellists were clearly of the opinion that there is little likelihood of the PT workforce obtaining enhanced legal and professional responsibilities enabling them to conduct greater clinical and operational roles in pharmacy within the next five years, with 66% of FPs indicating this outcome would be somewhat to very unlikely (Figure 2, Item 6).

Lack of optimism about positive developments to expand the roles of PTs is likely a reflection of the slow pace of change in this arena over several years, despite significant expenditure of effort at numerous levels of the profession. The capability of PTs to take on increased clinical and operational tasks in hospital pharmacy is well attested in international and Australian literature, with multiple successful examples of PT involvement in activities such as medication history recording, AMS, technician-lead dispensaries, and management of restricted medications amongst many other activities normally restricted to pharmacists due to legal and educational requirements<sup>1,2,3</sup>. In jurisdictions outside Australia, PTs frequently conduct these activities as part of their core business.

There remain several key obstacles to expanding the role of PTs in Australia, with these being the absence of a fit-for-purpose professional training to upskill the workforce, limited legal recognition under regulations, remuneration levels insufficient to retain staff in the sector, divergence in state awards regarding technician responsibilities and career paths, and residual opposition to change from within some sectors of the pharmacy profession itself.

The profession continues to address these challenges. In 2016 SHPA released a white paper ‘Exploring the role of hospital pharmacy technicians and assistants to enhance the delivery of patient centred care’, which provided in depth analysis of the current state and actions necessary to deliver change<sup>4</sup>. More recently, coordinated efforts have been undertaken to review the content for hospital PT training courses for adoption by registered training organisations in order to update modern workplace training requirements, and better outline career paths for PTs. At state and territory levels, unions and government health agencies are being lobbied to update existing PT workforce awards to address professional and legal obstacles to expanding their roles.

1. Buck T, Gronkjaer L, Duckert M-L, Rosholm J-U, Aagaard L. Medication reconciliation and prescribing reviews by pharmacy technicians in a geriatric ward. *Journal of Research in Pharmacy Practice*. 2013;2:145.



2. Elliott RA, Perera D, Mouchaileh N, Antoni R, Woodward M, Tran T, *et al.* Impact of an expanded ward pharmacy technician role on service-delivery and workforce outcomes in a subacute aged care service. *Journal of Pharmacy Practice and Research*. 2014;44(3):95–104.
3. Cooper JB, Lilliston M, Brooks D, Swords B. Experience with a pharmacy technician medication history program. *American Journal Of Health-System Pharmacy: AJHP: Official Journal Of The American Society Of Health-System Pharmacists*. 2014;71(18):1567–74.
4. Exploring the role of hospital pharmacy technicians and assistants to enhance the delivery of patient centred care. A White paper on the findings and outcomes of the 'Pharmacy Technician and Assistant Role Redesign within Australian Hospitals (Redesign) Project. Society of Hospital Pharmacists of Australia, November 2016.

## CONCLUSION

Managing available workforce resources to meet patient demand has always been a complex exercise. Changing focus of healthcare directed to delivering services in non-traditional areas and the increasing complexity of an aging population continue to challenge healthcare providers. Multiple digital enhancements to the way we work may create the extra efficiencies in the system needed to re-deploy the workforce to meet these demands with careful planning, understanding of the healthcare environment, and incorporation of automation into new facility designs wherever possible. An important requirement of meeting these challenges will be the continued progression of the development of the PT workforce to expand their scope of practice, training, and career paths.

## RECOMMENDATIONS

### 1. Resourcing specialised clinical services

Pharmacy leaders should consider developing the evidence base for the impact of expanding pharmacy services across seven days of the week, and across expanded hours of operation to align with peak admission and discharge times, and times when treatment decisions are being made by clinical teams.

Pharmacy leaders should engage with the health service leadership to demonstrate that clinical pharmacists' impact on patient care is agnostic to setting. As complexity of patient care increases in homes and non-admitted settings, the roles of pharmacists in these settings needs to be consolidated and expanded to ensure medication safety and quality.

### 2. Achieving efficiencies from integrated data sources

Pharmacy leaders should lobby facilities to include pharmacy informatics roles as essential positions in the workforce. This will enable continued practice-based enhancements which maximise the efficiencies of limited clinical pharmacy resources to be developed and deployed. Implementation of smart technologies which gather patient data in a simplified and coherent way should be developed in tandem with pharmacy practitioners who work at the coalface of patient care, so that functionality of patient medicines information integration can be maximised.

### 3. Providing tailored service every day

Pharmacy leaders should continue to integrate electronic health records into business-as-usual practices in pharmacy services, as well as contributing to the ongoing improvement of these systems to ensure they remain fit-for-purpose.

### 4. Automation built into design

Pharmacy leaders must ensure they are enabled to contribute to facilities and service planning for their hospitals to ensure due consideration of pharmacy design and model of care incorporates automated technologies.

### 5. Technicians' expanded practice gains

Support for expanded PT roles will need to continue to be championed at all levels. Peak professional organisation initiatives for changes to education and qualifications delivered through registered training organisations will need to be supported by pharmacy leaders and employers who should simultaneously engage unions and health agencies to create a case for change at state/territory levels. Given the relatively

small size of the PT workforce, pharmacy leaders will benefit from the coordinated consensus statements and will need to prioritise these initiatives within their local jurisdictions.

## **PARTNER PERSPECTIVE**

### **Australian Medical Association**

Australia's health workforce and resources are maldistributed. Fixing this is a priority for the AMA. We have been heavily involved in the soon to be released National Medical Workforce Strategy after calling for its establishment in 2018. We need to now start looking at all parts of Australia's healthcare workforce to ensure we have the right health professionals with the right skills working where we need them.

This will require more than increased training and financial incentives. Modern health professionals want more than just financial incentives to relocate for work, they want to work in an environment where they can utilise their skills, continue to develop, and contribute to the outcomes of the community. Central to this is collaboration.

Every doctor knows the value of pharmacists, knows the integral role that the hospital pharmacist performs in the management of patients that they care for together, as part of the patient's healthcare team. As experts in medication management and adherence, doctors and pharmacists work together to ensure patients receive the best care in hospital and can be transitioned back to care within the community by their GP and community pharmacist.

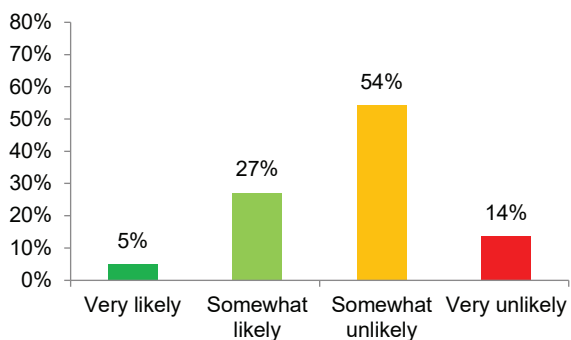
We know that doctors and pharmacists have higher rates of job satisfaction when they report stronger collaboration within their workplace. Collaboration is also better for patients. Moving forward, the AMA will be advocating for system reforms that supports models that prevent unnecessary readmission, or unnecessary presentation to hospital in the first place. Creating and reinforcing models with meaningful collaboration built into the system will be a core component of this.

**Dr Omar Khorshid, AMA President**

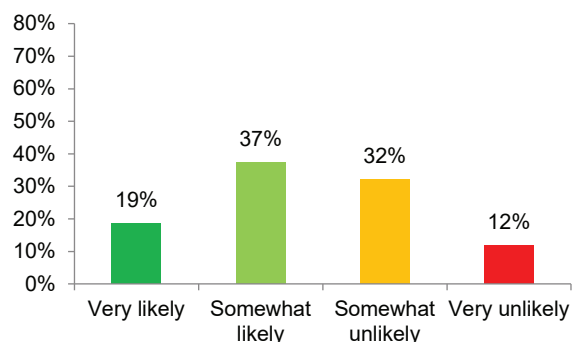
## FIGURE 2. WORKFORCE RESOURCING, SURVEY RESULTS

Forecast Panelists' responses to the question, 'How likely is it that the following will occur by the year 2026 in the geographic region where you work?'

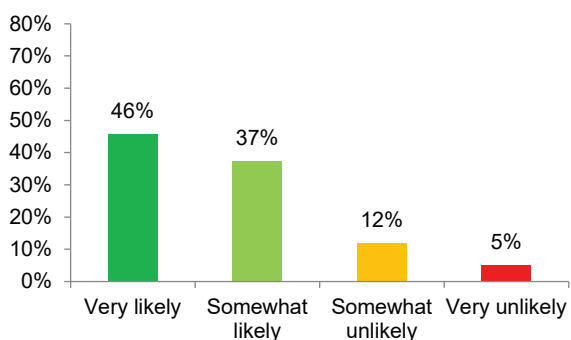
**1. Hospital pharmacy will be resourced to provide services in at least 50% of high-risk ambulatory care clinics and community settings**



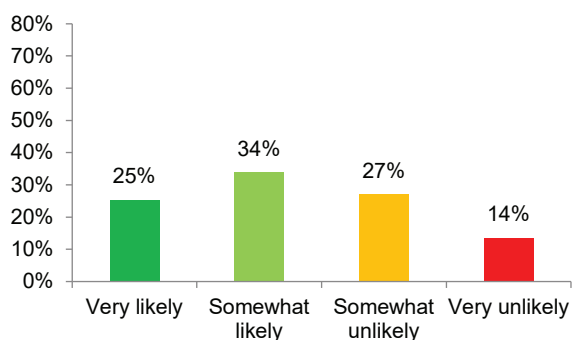
**2. Specialised pharmacy services will be integrated into multidisciplinary teams, including stewardship roles, to improve patient outcomes in 100% of health care facilities**



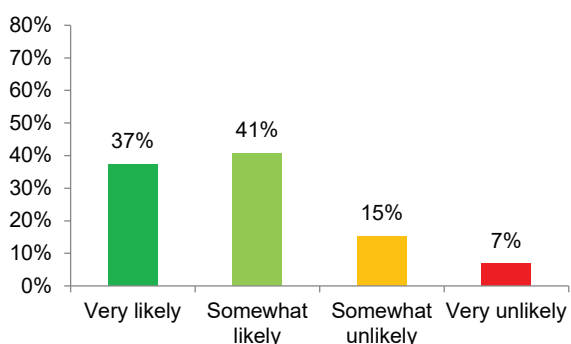
**3. The clinical pharmacy workforce will be realising significant operational efficiencies from the routine use of electronic platforms i.e. My Health Record in their clinical practice**



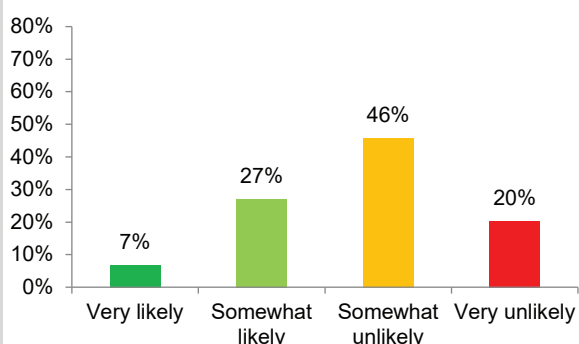
**4. At least 50% of hospitals will have 7-day pharmacy services matched to patient needs and specialities**



**5. 100% of all new hospital facility ('green-fields') developments and smaller scale redevelopments will include systems which utilise pharmacy automation (automated drug cabinets and robotics) in their design**



**6. The pharmacy technician workforce will have the legal and professional responsibility necessary to enable them to undertake activities currently assigned to pharmacists**





## 4.3 THEME 3 – RELIABILITY OF MEDICINES SUPPLY

**Advisory Committee Lead:** Ange Young

**Theme Leads:** Duncan McKenzie, Lorah Hickman, and Noman Masood

### INTRODUCTION

The six questions in this section relate to supply disruption warning systems, support for equitable access and adequate supplies, pharmacy procurement systems and staffing, and automation/robotics.

Despite immense recent and ongoing strain placed on our pharmaceutical supply chain which have led to significant shortages of critical medicines, there remains minimal nationally coordinated and funded approaches to predicting, mitigating, and managing medication shortages.

### (Q1) A NATIONAL PHARMACEUTICAL EARLY WARNING INFORMATION SYSTEM

Medicines shortages continue to remain a common occurrence in Australia. In 2014 the TGA responded to shortages in line with other international markets<sup>1,2</sup> and established the Medicines Shortage Information Initiative<sup>3</sup> (MSII), with voluntary reporting by medicines sponsors. This approach has faced challenges as a suboptimal source of complete information for managing shortages, i.e. it does not assist with forecasting potential outages. Most jurisdictions have established centralised response mechanisms that support health services, however there are no cross-linkages across different jurisdiction-based responses between each other or the TGA.

Significant local system and clinical resources are consumed to manage shortages. The occurrence and acuity of the drugs impacted has extended to critical medicines, e.g., adrenaline, noradrenaline, cisatracurium and fentanyl.

The policy initiative<sup>3</sup> incentivising local manufacturing appears to be a step in the right direction, and the sector must advocate for prioritising products critical to functioning health facilities.

Following advocacy by SHPA and its landmark survey on medicines shortages in Australian hospitals in 2017, SHPA worked with the TGA to make the reporting of shortages on the MSII mandatory from 1 January 2019. While this has improved the reporting of actual and anticipated shortages to minimise disruption to care, stakeholders recognise there are numerous other factors in the supply chain that impact on medicines supply and availability which is compounded by Australia's small market size on the global stage.

The logistical and operational impact of shortages on health systems often leads to negative purchasing behaviour resulting in inequity of access<sup>2</sup>. The sector needs to promote overarching ethical principles of beneficence, solidarity, utility, equity and stewardship that highlights the role of the TGA's MSII system as a notification for initiating a resource allocation response, rather than as a signal for predatory buying. There also needs to be recognition of the logistic and operational impact of shortages on health systems that staff are perpetually managing that require timely development of strategies including forecasting, restriction of stock distribution, and sourcing of clinical alternative agents. It is in this context, advocacy is needed with TGA and other regulatory authorities, to encourage reconfiguration of the TGA's MSII to act as a national early warning system for critical medications shortages that works in tandem with development of above-mentioned responses.

Forecast Panellists indicated a degree of uncertainty about achieving this goal, however 61% of responses skewed to 'likely', highlighting a level of optimism and a recognition of its importance (Figure 3, Item 1).

1. Bocquet F, Degrasat-Théas A, Peigné J, Paubel P: The new regulatory tools of the 2016 Health Law to fight drug shortages in France. *Health Policy* 121 (2017) 471–476.
2. Bochenek T, Abilova A, Alkan A, Asanin B *et al*: Systemic Measures and Legislative and Organizational Frameworks Aimed at Preventing or Mitigating Drug Shortages in 28 European and Western Asian Countries. *Frontiers in Pharmacology*. Volume 8, January 2018.3. *Medicine Shortages*. Therapeutics Goods Administration. Available at <https://www.tga.gov.au/hubs/medicine-shortages> Accessed on 16 June 2021. Last updated 22 June 2020.

3. Funding for businesses to integrate their products and services into domestic and global value chains. Accessed online at <https://business.gov.au/grants-and-programs/modern-manufacturing-initiative-manufacturing-integration> on 16 June 2021. Last updated 8 June 2021.

## **(Q2 & Q3) POLICY AND COLLABORATION TO SUPPORT PATIENT ACCESS TO ESSENTIAL MEDICINES**

During the COVID-19 pandemic, a survey of hospital pharmacy directors reported disparate access to medicines, with backorders for medicines increasing in frequency with the remoteness of the hospital<sup>1</sup>.

Rural/remote hospital sites were also less likely to report more confidence in their ability to procure medicines for their current and maximum ICU capacity, compared to metropolitan sites.

The shortages and delays reported during COVID-19 pandemic were often artificial as number of suppliers unilaterally implemented constraining mechanisms due to surge in purchasing activity for specific products. This surge put immense pressure on delivery logistics and was structured without any coordination between health systems and suppliers. Medicines Australia has rightfully committed to partnering with government and supply chain participants to identify areas of concern to pre-empt and mitigate shortages affecting patients<sup>2</sup>. Medicines Australia also advocated for the federal government to introduce greater clarity to the Medicines Shortages List and Protocols to Manage Shortages. In addition, 'greater detail on what measures are implemented should a national shortage occur – so that healthcare professionals and patients clearly understand the comprehensive protocols in place and what they need to do'.

The Medicines Shortages Working Party, consisting of health professionals, pharmaceutical industry and wholesaler groups, became more active during the COVID-19 outbreak by meeting weekly to discuss and resolve shortage issues<sup>3</sup>.

Perhaps the increased awareness and advocacy prompted by the COVID-19 outbreak supports the notion that the majority (61%) of FPs were optimistic about regulatory and policy changes that would ensure all hospitals, irrespective of location or size, would have equitable access to pharmaceutical supply by 2026 (Figure 3, item 2).

Forecast Panellists were split, therefore expressing uncertainty about the federal government driving policy to mandate suppliers' stock holding of essential medications (Figure 3, Item 3).

Critical stock shortages have become business-as-usual for the Australian medication supply market. There are many factors that feed into shortages including forecasting, supply, demand, and communication. All these issues cannot be resolved in isolation by one party and require a collaborative approach between key stakeholders. A federally sponsored approach through the TGA would be the first step towards designing a policy framework that could underpin some of the innovations required to provide complete supply chain clarity.

Following significant advocacy efforts, suppliers are mandated to report medication shortages<sup>4</sup>, which has proven to be of some benefit in the communication aspect of the supply chain. There appears to be no policy initiative that requires suppliers to hold greater supply of their products on-island in Australia or share their stock on hand information with health system procurement and supply chain teams.

The COVID-19 pandemic has seen a significant increase in demand, leading to the federal government implementing some purchasing limits<sup>5</sup>. A 2021 Medicines Australia report concluded that the Australian pharmaceutical supply chain demonstrated 'significant resilience' despite a heavy reliance on importation of products<sup>6</sup>.

The picture at the coalface from hospital pharmacy directors surveyed by the SHPA at this time painted a very different picture, with 78% responding that medicines supply was not as reliable or timely as usual<sup>7</sup>. There was also broad criticism about a lack of transparency from the TGA and suppliers during the pandemic, which led to confusion about whether medications were in short supply or being placed on constricted supply.

Australia holds a National Medical Stockpile with a limited quantity of pharmaceuticals, vaccines, and antidotes for use during public health emergencies. The stockpile is intended to complement state and territory supplies

in a health emergency, however it was not equipped with pharmaceuticals to adequately supplement states and territories through the COVID-19 pandemic.

A local preparedness model can be an alternative approach to 'just-in-time' inventory management that most Australian hospitals have been able to reasonably rely on during recent years. This has been referred to as a 'just-in-case' approach, best adopted in remote areas or in times of short-term supply interruptions. This approach is more expensive, consuming financial, time and space resources and carries its risks, including stock expiry. Health systems must work closely with suppliers to minimise commercial risk for suppliers and incentivise increased stock holdings of essential medications.

Increased strategic stock holdings have been an essential management and insurance strategy for all states, territories, individual hospitals, and health networks during the pandemic – independent of the federal government. Many are likely to remain for the medium-term given current heavy reliance on India as a supplier of active pharmaceutical ingredients and generic medications to the global market.

It is likely that strategic stockholdings, particularly of essential medicines, will need to be operationalised within jurisdictions for the foreseeable future, with frameworks for decision-making around medications required to be held locally rather than specifying prescriptive universal medication lists. Local work should ensure adequate pharmaceutical supplies for the medical services and geographic risks within a jurisdiction.

Pharmacy leaders should partner with SHPA to coordinate intra- and inter-jurisdictional collaboration and cooperation to share stock holding information and essential medicines lists.

1. SHPA 8 May 2020: COVID-19 Hospital Pharmacy Capacity Snapshot. Available at [www.shpa.org.au/sites/default/files/uploaded-content/field\\_content\\_file/shpa\\_covid-19\\_hospital\\_pharmacy\\_capacity\\_snapshot\\_-\\_8\\_may\\_2020.pdf](http://www.shpa.org.au/sites/default/files/uploaded-content/field_content_file/shpa_covid-19_hospital_pharmacy_capacity_snapshot_-_8_may_2020.pdf).
2. Medicines Australia Reinforces Need For Continued Collaborative Commitment to Australia's Medicine Supplies
3. Critical medicines supply modelling supports return to elective surgery statement from the medicines shortages working party June 2020 - [www.tga.gov.au/critical-medicines-supply-modelling-supports-return-elective-surgery](http://www.tga.gov.au/critical-medicines-supply-modelling-supports-return-elective-surgery)
4. Medicine shortages in Australia A snapshot of shortages in Australian hospitals, 2017, SHPA.
5. Vulnerable Supply Chains Productivity Commission Interim Report March 2021.
6. Davey, M. 2021, 'Australian drug shortage sparks calls to loosen prescription rules', The Guardian, <https://www.theguardian.com/science/2021/jan/23/australian-drug-shortage-sparks-calls-to-loosen-prescription-rules> (accessed 18 February 2021).
7. SHPA Submission to Senate Inquiry into the Australian Government's response to the COVID-19 pandemic 2020. [https://www.parliament.vic.gov.au/images/stories/committees/paec/COVID-19\\_Inquiry/Submissions/59b\\_The\\_Society\\_of\\_Hospital\\_Pharmacists\\_of\\_Australia.pdf](https://www.parliament.vic.gov.au/images/stories/committees/paec/COVID-19_Inquiry/Submissions/59b_The_Society_of_Hospital_Pharmacists_of_Australia.pdf).

## **(Q4 & Q5) NATIONAL STANDARDS FOR PHARMACEUTICAL PROCUREMENT PROCESSES WITHIN HOSPITAL PHARMACY**

Pharmaceutical procurement involves the strategic process of sourcing products, including research, negotiation, and planning. Procurement systems vary between health services and jurisdictions, such as local and/or state-wide pharmaceutical contracts, and jurisdictional centralised procurement departments or teams. The result is great variability in the resourcing and amount of time individual hospital pharmacy staff spend on procurement, and limited abilities and/or capacities to respond to surges in demand.

To date, there is no minimum set of standards or credentialing process to measure pharmacy procurement system performance. Although not commonplace in procurement, credentialing is currently used in a variety of areas within hospital pharmacy to ensure staff are competent to undertake aspects of their roles independently, such as dispensing, partnered charting and compounding. The near-even split of FPs regarding whether such standards or credentialing processes would be in place in the future demonstrates uncertainty about the topic (Figure 3, Item 4). The spread in responses could be due to the varying systems in place across the nation. The challenge for the profession may be to identify if these systems improve performance, and to promote sharing of any existing, successful in-house standards or credentialing that could be used to support the development of a nationally standardised system.

Seventy per cent of FPs felt pessimistic that national standards for full-time equivalent employment (FTE) in procurement will be set in the coming five years (Figure 3, Item 5). Despite being an essential component for the operational function of a hospital pharmacy, there are no FTE recommendations for procurement positions

within the profession. The variability of systems in place, as described above, may pose challenges to this, yet should not be insurmountable.

SHPA's Standards of Practice series is widely utilised and well-referenced by pharmacists and health professionals seeking guidance on the delivery of clinical, operational and specialty hospital pharmacy services<sup>1</sup>, and would provide the ultimate platform to include guidance on measuring pharmacy procurement performance, credentialing and FTE recommendations for hospital pharmacy procurement.

1. SHPA Standards of Practice. Available at <https://www.shpa.org.au/standards-of-practice> accessed on 16 June 2021.

## (Q6) FUTURE ADOPTION OF AUTOMATION AND ROBOTICS

Over half of FPs felt it is unlikely that automation and robotics will be built into most distribution systems in the next five years (Figure 3, Item 6).

Automation comes in a variety of forms in hospital practice, including automated dispensary cabinets, original pack dispensing/labelling robots, unit dose packing equipment, and controlled substance cabinets. Robotics can include manufacturing robots for sterile and chemotherapy products.

Automation boasts benefits for safety and productivity largely attributed to improved accuracy through reduction in selection errors, and reduced delays improving timeliness of supply. Automation may have the added benefit of increasing the efficiency of limited pharmacist and technician resources, enabling capacity to deliver higher-value patient-facing roles, and reducing work health and safety injuries caused by repetitive tasks. This is particularly important in the period during and following the COVID-19 pandemic, where hospital staffing is affected by recruitment delays and staff spending more time at home due to quarantine or flexible working arrangements. Automation is a critical step in the process of implementing closed-loop medication management systems alongside contemporary information technology<sup>1,2</sup>.

Automation can provide financial benefits<sup>4</sup> due to greater accountability of medicines through access restrictions, improved accuracy of usage data and improved expiry date management. Automation commonly leads to a reduction in space allocated to medicines storage<sup>3</sup>.

For many pharmacies, particularly those in regional settings, return on investment may not be as great as for a larger hospital. Implementation of automation and robotics require a significant initial outlay of capital, combined with appropriate contemporary information technology and adequate floorspace. There may also be the issue of overcoming organisational inertia to creatively implement new technology, along with significant changes to workflows and roles of individuals within the broad medication supply system.

It is important pharmacy leaders ensure their existing distribution systems are maximised for efficiency and safety. Leaders should engage in planning and evaluation to determine if automation/robotics may be a beneficial addition to their service. This may be particularly pertinent at a time when redevelopment or new builds of pharmacy departments are in the planning stage. Pharmacy leaders are guided to commence deliberations with reference to the 2019 SHPA publication *Factors to consider for the implementation of Automated Pharmacy Distribution Systems in Hospitals and Health Services*.

1. Factors to consider for the implementation of Automated Pharmacy Distribution Systems in Hospitals and Health Services automation\_practice\_update.pdf ([shpa.org.au](https://www.shpa.org.au)).
2. Bloom, S. (2007). Implementing pharmacy automation toolkit report commissioned by the NHS. S B Consultancy. Available from: [media.dh.gov.uk/network/121/files/.../rt-Automation-toolkit-FINAL-with-changes.doc](https://media.dh.gov.uk/network/121/files/.../rt-Automation-toolkit-FINAL-with-changes.doc).
3. Brinklow, N. (2006). A report assessing the impact of an Automated Dispensing System (ADS) at King's College Hospital NHS Trust: Pharmacy Department. Available from: <http://media.dh.gov.uk/network/121/files/2011/03/robot-KCH.pdf>.
4. ACSQHC 2019 Electronic Medication Management Systems A guide to safe implementation Electronic Medication Management Systems ([safetyandquality.gov.au](https://www.safetyandquality.gov.au)).

## CONCLUSION

As the pharmaceutical supply chain remains a focus of much attention, a concerted effort is required to ensure this issue, which clearly has direct patient and system implications, retains its critical importance. The sector must include, in its short- and long-term vision, strong advocacy for ongoing investment in system(s) that result in equity of access to essential medications.

## RECOMMENDATIONS

### 1. Improved early warning systems

Pharmacists must promote the idea of a central early warning system for impending medication shortages at a federal level that leads to equity of access for all hospitals.

There should be support for the national linking and collaboration between jurisdiction-level warning systems.

Pharmacy leaders should coordinate intra-jurisdictional collaboration and cooperation to share stock holding information and essential medicines lists.

### 2. Achieving efficiencies from integrated data sources

Developing and advocating a Purchasing Standards Policy should be seen as a key strategic goal.

### 3. Standards for pharmacy procurement

Utilise leaders within the profession to create or update relevant standards of SHPA standards of practice to ensure that they include a minimum set of pharmacy procurement system performance measures.

Bring pharmacy profession leaders together to collaborate on what is required within a credentialing program for ensuring pharmacy procurement staff are competent and confident. This information can then be used to create credentialing guidelines for the profession.

Pharmacy leaders should ensure their departments have robust in-house systems in place to ensure their pharmacy procurement performance is monitored and performing as it should be.

Ensure new or revised standards of practice in relation to procurement include resource requirements including different procurement models.

Pharmacy leaders should ensure existing distribution systems are optimised and should engage in planning and evaluation of automation/robotics within their service.

Ensure recommendations are implemented from the SHPA COVID-19 hospital pharmacy capacity snapshot series final report, May 2020.

## PARTNER PERSPECTIVE

### Medicines Australia

Strengthening Australia's already reliable medicines supply chain, including through crisis preparedness planning, requires an evidence-based nationally coordinated approach alongside industry and public stakeholders. This includes demand and supply forecast modelling to ascertain medicine requirements, particularly in state and private hospitals, as has been developed to respond to COVID-19. Such modelling should be expanded and utilised for a wider variety of products, including to ensure appropriate planning of purchasing and for stockpiling purposes so that medicines sponsors can adapt and meet patient demand. This could provide assurance of supply and assist in mitigating potential localised and state-based panic stockpiling, including by consumers, and avoid medicines shortages. Additionally, improving national infrastructure, including in the digital space, will allow for better supply chain transparency to monitor and manage stocks throughout the supply and distribution chain.



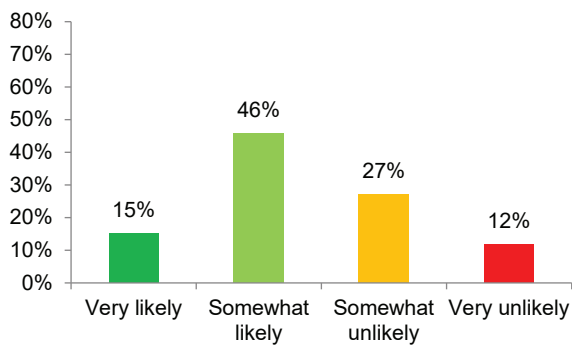
There is always an opportunity to strengthen Australia's supply chains and ensure, through better planning, coordination, government support and industry collaboration, that we will be even more flexible and able to adapt to future crisis. This will involve Australia being a trusted partner globally for research, development and supply of medicines, while fostering closer R&D, manufacturing and industry partnerships domestically.

**Elizabeth de Somer, CEO**

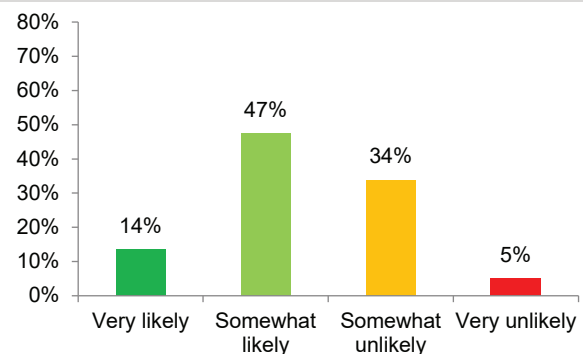
## FIGURE 3. RELIABILITY OF SUPPLY, SURVEY RESULTS

Forecast Panelists' responses to the question, 'How likely is it that the following will occur by the year 2026 in the geographic region where you work?'

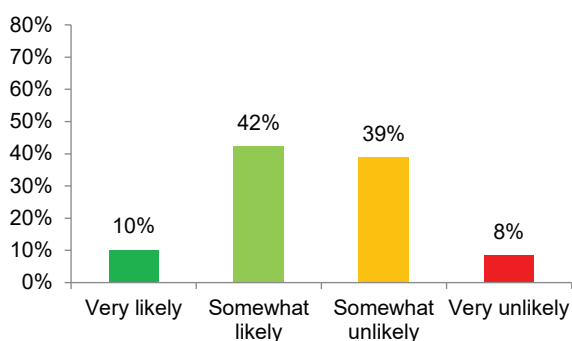
**1. A national system will provide early warning / notification to your geographic region about 100% of potential disruptions to pharmaceutical supply**



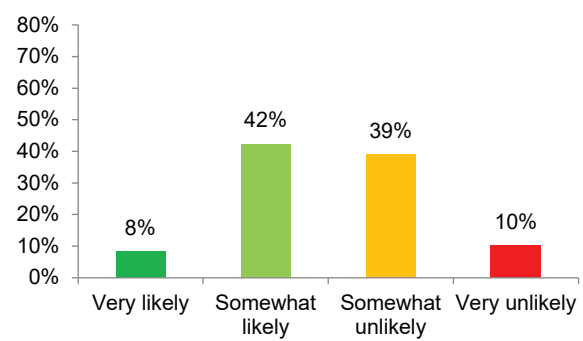
**2. Regulatory and policy changes will ensure that all hospitals, irrespective of location or size, have equitable access to pharmaceutical supply**



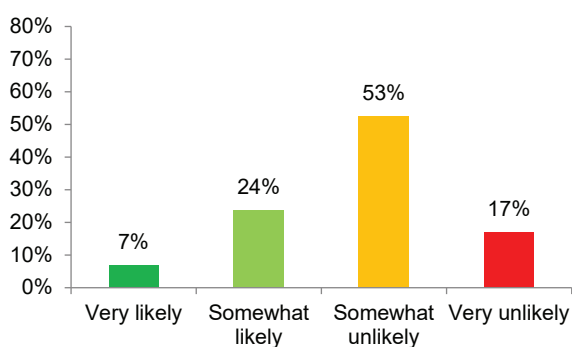
**3. Federal government will mandate an essential and relevant "never out" medication list and provide systems that encourage manufacturers/wholesalers to maintain an adequate supply of these products**



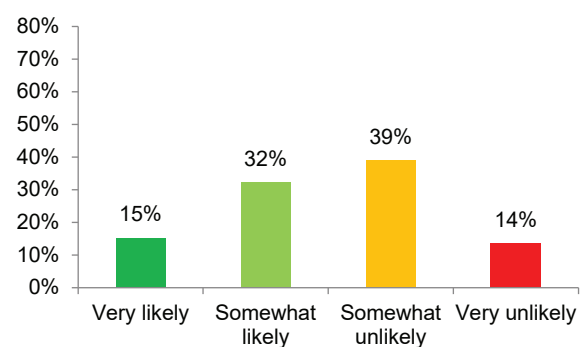
**4. A minimum set of standards / credentialing process will measure pharmacy procurement system performance in 100% of pharmacy departments**



**5. National standards will be set for pharmacy procurement staff determining FTE allocation relating to hospitals**



**6. At least 50% of hospitals will have automation/robotics built into pharmacy supply and medication distribution systems**





## 4.4 THEME 4 – MEDICATION COMPLEXITY AND ACCESS

**Advisory Committee Lead:** Peter Smart

**Theme Leads:** Barry Jenkins and Tom Chynoweth

### INTRODUCTION

The advent of personalised medicine, biological therapies, and other complex, often high-cost, treatments have created specific challenges for pharmacy leaders, other clinicians, bureaucrats, and patients alike. With traditional funding, mechanisms and approaches to patient care having proven inadequate to cater for this complexity; novel approaches to facilitating patient access require consideration.

Questions posed to FPs on this theme were focussed on the expansion of specialised, clinically centred pharmacy resourcing at both ends of the medication cycle to support value and patient safety, as well as patient centred, sustainable funding, and accessibility to complex and emerging treatment types.

### (Q1 & Q2) RESOURCING SPECIALISED PROCUREMENT AND MEDICINES ACCESS PROGRAMS

Forecast Panellists clearly acknowledge the role that specialised pharmacy resources will play in the procurement and facilitation of medicines access programs and specialist supply arrangements (excluding clinical trials).

Sixty-six per cent of FPs were optimistic that at least 50% of hospitals will assign resources to provide specialised, clinically directed procurement services to drive value and safety (Figure 4, item 1). Pharmacy has a key role to play in ensuring safety in medicines procurement, providing an additional layer of protection in addition to the regulatory framework delivered by the TGA.

Safety initiatives supported by pharmacy resourcing can include review of packaging and labelling, consideration of 'look-alike, sound-alike' medicine names, and use of the most appropriate presentation including ready-to-use medicines where available<sup>1,2</sup>. Additionally, there is significant opportunity for pharmacy expertise to optimise value for money through procurement initiatives including management and mitigation of medication shortages, driving compliance with jurisdictional and local contracts, understanding market dynamics and funding models in decision-making, leveraging established clinical relationships to manage change, and use of clinical knowledge to guide differential purchasing decisions. Successful implementation of such initiatives can deliver benefits considerably greater than the costs of investment in the pharmacy resources employed to undertake them.

Sixty-one per cent of FPs believed at least 75% of hospitals will define a specialised pharmacy role to facilitate medicines access programs or specialised supply arrangements (Figure 4, item 2). Medicines access programs and specialised supply arrangements facilitate access to medicines on a deferred, subsidised, or cost-free basis and may include compassionate use, expanded access, product familiarisation, and medicines not subject to other funding arrangements. While increasingly seen as a mechanism for early access to novel treatment options, these programs require appropriate governance oversight and resourcing to ensure patients and hospitals are not unduly exposed to clinical risk of harm or financial risks through implementation<sup>3</sup>.

The articulation of approaches to risk management and measurement of offsets to hospital expenditure can support pharmacy leaders in advocating for resources to provide specialist management of these programs to facilitate patient access.

1. Gaudins, LV, Treseder, R, Hui, C, Samuel, TL and Dooley, MJ (2016), A proactive quality strategy to decrease the risk of error associated with medication procurement. *J Pharm Pract Res*, 46: 145–151. <https://doi.org/10.1002/jppr.1181>.
2. ACSQHC – Principles for the safe selection and storage of medicines [https://www.safetyandquality.gov.au/sites/default/files/2020-08/principles\\_for\\_safe\\_selection\\_and\\_storage\\_of\\_medicines\\_-\\_guidance\\_and\\_survey\\_tool\\_0.pdf](https://www.safetyandquality.gov.au/sites/default/files/2020-08/principles_for_safe_selection_and_storage_of_medicines_-_guidance_and_survey_tool_0.pdf).
3. <http://www.catag.org.au/wp-content/uploads/2012/08/OKA10428-CATAG-Guiding-Principles-MAP-inc-cost-recovery-final-2018.pdf>.

### (Q3) FUNDING REFORMS

Slightly more than half of FPs were positive that reforms of medicines funding in Australia will enable access to genetic, personalised, or complex medication regimens (Figure 4, item 3).

Most public hospitals across Australian have had access to the Pharmaceutical Benefits Scheme (PBS) since the adoption of Pharmaceutical Reforms<sup>1,2</sup> progressively from 2001. These reforms, alongside the introduction of the Highly Specialised Drugs program (HSDP)<sup>3</sup> in 2010, the Efficient Funding of Chemotherapy (EFC) program<sup>4</sup> in 2011, and the Biosimilar Awareness Initiative and Uptake Drivers<sup>5</sup> in 2015, represent the largest structural changes to medicines access in Australia since the introduction of the PBS itself.

More recent reviews of the PBS have focused on remuneration and community access to medicines<sup>6,7</sup> as well as PBS prescribing alignment with quality use of medicines<sup>8</sup> and addressing antimicrobial resistance<sup>9</sup>. However, there remains no specific evaluation program for consideration of funding reimbursement for medicines treating rare diseases ('orphan drugs') funded through the Life Saving Drugs Program<sup>10</sup>. More recently, limitations have been applied to the use of PBS in public hospitals for high-cost medicines requiring initiation in the inpatient hospital setting, potentially resulting in inequity of consumer access<sup>7</sup>.

Significant structural reform is required to ensure medicines funding mechanisms in Australia remain fit-for-purpose and sustainable. Measures are required to ensure the system 1) incorporates robust cost-effectiveness assessment processes (that align with community expectations), 2) is dynamic and agile, 3) embraces pricing structures that can manage increasing complexity, 4) minimises impediments to utilisation, and 5) improves access to emerging technological and medicines innovations, such as genetic and personalised medication regimens or genetic testing directed therapies.

Development of single-funder models for medicines in hospitals may assist in reducing inequity of consumer access to high-cost and complex medication regimens, and counter the perverse incentives influencing provision of treatment in settings not aligned with consumer-centred care or Australia's National Medicines Policy<sup>11</sup>.

1. *National Health Act (1953)*.
2. *Health Care (Appropriation) Act (1998)*.
3. National Health (Highly specialised drugs program) Special Arrangement (2010).
4. National Health (Efficient Funding of Chemotherapy) Special Arrangement (2011).
5. National Health Amendment (Pharmaceutical Benefits) Bill (2015).
6. Review of Pharmacy Remuneration and Regulation (2017). [https://www1.health.gov.au/internet/main/publishing.nsf/content/7E5846EB2D7BA299CA257F5C007C0E21/\\$File/review-of-pharmacy-remuneration-and-regulation-final-report.pdf](https://www1.health.gov.au/internet/main/publishing.nsf/content/7E5846EB2D7BA299CA257F5C007C0E21/$File/review-of-pharmacy-remuneration-and-regulation-final-report.pdf).
7. PBS Pharmaceuticals in Hospitals Review (2017) <https://www.pbs.gov.au/reviews/pbs-pharmaceuticals-in-hospitals-review-files/PBS-Pharmaceuticals-in-Hospitals-Review.pdf>.
8. Opioids Review <https://www.pbs.gov.au/reviews/authority-required-files/opioids-roundtable-outcome-statement.pdf>.
9. Antibiotics Review <https://www.pbs.gov.au/reviews/authority-required-files/antibiotics-roundtable-outcome-statement.pdf>.
10. LSDP <https://www.pbs.gov.au/reviews/lspd-technical-assessment-report/lspd-review-technical-assessment-april-2015.pdf>.
11. National Medicines Policy [https://www1.health.gov.au/internet/main/publishing.nsf/Content/B2FFBF72029EEAC8CA257BF0001BAF3F/\\$File/NMP2000.pdf](https://www1.health.gov.au/internet/main/publishing.nsf/Content/B2FFBF72029EEAC8CA257BF0001BAF3F/$File/NMP2000.pdf).

### (Q4) BIOLOGICALS AND BIOSIMILARS

Of all the items in this section of the Forecast, the strongest level of agreement was with the question of biosimilar uptake in hospitals (Figure 4, Item 4).

Biologics expenditure in the US reached \$211 billion USD in 2019, representing 43% of spending on all medicines, and growing twice as fast as the remaining medicine categories<sup>1</sup>. There are currently 33 biosimilars across 13 molecules with an additional 108 in development across 22 other molecules. Savings are modelled to exceed \$100 billion over the next five years based on a 30% average discount rate<sup>1</sup>.

In Australia, the initial slow adoption compared with Europe and the US is likely to accelerate<sup>2</sup>, but market variability in biosimilar development and uptake is difficult to predict. Intercontinental Medical Statistics data for March 2021<sup>2</sup> reveals a poor uptake of the two PBS infliximab biosimilars (30% in five years) due to competitive

pricing from the reference brand. In contrast, rituximab and trastuzumab are already at 51 and 33% respectively within 12 months and will reach 100% this year due to withdrawal of the reference brands from the PBS.

Government-sponsored education, and the application of PBS uptake drivers, in particular pharmacist substitution of a-flagged biosimilars, will ease interchangeability between brands. O'Callaghan<sup>2</sup> writes that without this there is potential for biosimilar dominance, preventing deeper savings. Interchangeability between reference and biosimilar adalimumab was found to have no detectable impact on efficacy, safety or immunogenicity when switched up to four times<sup>3</sup>, which should give confidence to community-based clinicians in prescribing and dispensing where there are multiple molecules to choose between.

A recent Generic Biosimilar Medicines Association report<sup>4</sup> found significant improvements in attitudes towards biosimilars since the original 2016 survey, but prescriber concerns still dominate the decision to prescribe biosimilars, and this can influence the consumer through negative framing which focuses on the differences between the biological and biosimilar, rather than the similarities<sup>5</sup>.

The continuing shift to biologicals (including biosimilars) is profound and will challenge every aspect of the pharmacy business. Compounding capacity needs to grow, and pharmacists of all persuasions will need to adapt to a sea of new molecules whose nomenclature give no hint of their pharmacological class. It is however, an opportunity that pharmacy leaders are well placed to manage, drive, and perhaps to benefit from, with business proposals to leverage off the savings.

1. IQVIA institute. Biosimilars in the United States 2020–2024: competition, savings, and sustainability. Durham: iqvia;2020. Available from <<https://www.iqvia.com/insights/the-iqvia-institute/reports/biosimilars-in-the-united-states-2020-2024>>
2. O'callaghan J, Parry SP, Bermingham M, Morris IM, Griffin BT. Regulation of biosimilar medicines and current perspectives on interchangeability and policy. *Eur J Clin Pharmacol* 2019; 75: 1-11. IMS national data Australia March 2021
3. Blauvelt a, Lacour JP, Fowler Jr JF, Weinberg IM, Gospodinov D, Schuck E *et al*. Phase iii randomised study of the proposed adalimumab biosimilar GP2017 in psoriasis: impact of multiple switches. *Brit J Derm* 2018; 179: 623-631.
4. Generics and biosimilars medicines association. Confidence in biosimilar medicines, amongst specialists, GP's and pharmacists. Deakin west: generics and biosimilars medicines association;2020. Available from <<https://www.gbma.com.au/confidence-in-biosimilar-medicines-amongst-specialists-gps-and-pharmacists/>>
5. Gasteiger C, Jones ASK, Kleinstauber M, Lobo M, Horne R, Dalbeth N *et al*. Effects of message framing on patients' perceptions and willingness to change to a biosimilar in a hypothetical drug switch. *Arthritis care res* 2020; 72: 1323-30.

## **(Q5 & Q6) DISPENSING AND AMBULATORY CARE SERVICES ADAPTED TO IMPROVE PATIENT ACCESS TO COMPLEX MEDICATIONS**

Two-thirds of FPs agree that a quarter of all hospitals will supply medications via a shared care dispensing (SCD) or outsourced model to manage demand and supply services closer to home (Figure 4, Item 5). A similar number of FPs agree that at least half of our hospitals will employ pharmacists in ambulatory care settings to help clinical team members navigate complex medicines access and arrangements (Figure 4, Item 6).

These two issues speak to the problem of managing an ever-growing cohort of complex patients needing specialist care. In a busy outpatient clinic where there are complex medicines and patient-specific issues to manage, the traditional business model of doctor and nurse struggles to cope. Equally, hospital dispensaries cannot be expected to effectively manage or maximise outcomes for a growing list of outpatients tied to the hospital.

The benefits of pharmacist-run clinics are similar to those delivered to inpatients by ward / team-based pharmacists, only in a different setting. Tong *et al*<sup>1</sup> found that a general medicine post-discharge pharmacist clinic was able to identify – from a scheduled 20-minute appointment – clinical interventions associated with therapeutic drug monitoring, medicines which should have been ceased or continued, and wrong doses. Overall, 89% (77) of patients had a medicine-related problem. Pharmacist clinics in tertiary hospitals are extending into a broad range of specialties including elective surgery pre-admission, nephrology, cancer, advanced heart failure, advanced lung failure, palliative care, and inflammatory bowel disease.

A key enabler in the growth of pharmacist clinics in public hospitals has been the Activity Based Funding<sup>2</sup> system with funded pharmacist clinic codes for patient services that can be face-to-face or via telehealth. To take this to the next level and to be truly patient focused (while also leveraging off the COVID-19 induced

expansion of telehealth services), is to consider how we can help patients to obtain their non-PBS and s100 medicines most conveniently and safely. This may be at a hospital closer to home, or even via a sponsor-facilitated supply arrangement.

Sixty-three per cent of FPs agree that at least 25% of hospitals will have some form of shared care arrangement in place (Figure 4, Item 5). This result probably reflects the tertiary hospital demographic which will recruit patients through admissions or referrals, and which have a steady growth in patients that could otherwise have their ongoing hospital-based medications dispensed at a local secondary, regional and remote hospitals.

To our knowledge, SCD as a concept has not been defined, and its acceptance in Australia is unknown. In WA and Vic there are a mix of agreements between public hospitals and private community pharmacies who invoice the public hospital for co-payment, drug cost, and markup (as relevant) for specific medicines like clozapine or for HIV treatment. In Vic, SCD agreements are commonplace between public hospital pharmacies within the same public hospital network. Whereas, in WA, even within the same budget boundary, such arrangements are difficult to negotiate and are mostly comprised of individual patient agreements rather than a defined policy.

Managing complexity with a senior pharmacist embedded within a team, performing targeted medication services in concert with doctors and nurses, improves the productivity of the clinic and the care of the patient. Decentralised models of care using telehealth and SCD models will make it easier for patients to navigate the health system, and reduced travel will assist governments in meeting climate health ambitions<sup>3,4</sup> by decarbonising their services.

1. Tong E, Choo S, Ooi S-C, Newnham H. Improving the transition of elderly patients with multiple comorbidities into the community: impact of a pharmacist in a General Medicine outpatient follow-up clinic. *Pharm Prac Res* 2015; 45: 117–121.
2. Independent Hospital Pricing Authority. Pricing Framework for Australian Public Hospital Services 2021–2 March 2021. Available from <<https://www.ihpa.gov.au/publications/pricing-framework-australian-public-hospital-services-2021-22>>.
3. Climate Health WA Inquiry: Final Report Dr Tarun Weeramanthri November 2020. Available from <https://www2.health.wa.gov.au/climate-health-wa-final-report>.
4. The Royal Australasian College of Physicians. Environmentally Sustainable Healthcare Position Statement November 2016. Available from <[www.racp.edu.au/docs/default-source/advocacy-library/climate-change-and-health-position-statement.pdf?sfvrsn=5235361a\\_5](http://www.racp.edu.au/docs/default-source/advocacy-library/climate-change-and-health-position-statement.pdf?sfvrsn=5235361a_5)>.

## CONCLUSION

During the next five years and beyond, pharmacy leaders will continue to be challenged to maintain affordable and timely access to medications with increasingly complex clinical characteristics.

Leaders have an important role in establishing and sustaining expert resources and systems to ensure value, safety and patient care is optimised.

While for some questions, it is suspected that the responses may reflect the tendency for complex medications to be a tertiary hospital concern, it is anticipated that by 2026 the impact will have broadened.

Encouragingly, FPs are optimistic that the funding arrangements will adapt to this changing environment. It is also promising to see confidence in the professions ability to adapt and innovate to navigate and lead hospitals, clinicians, and patients through these complex medication journeys.

## RECOMMENDATIONS

### 1. Resourcing specialised procurement and medicines access programs

Ensure procurement frameworks safeguard quality use of medicines and measure the value delivered from pharmacy resources.

### 2. Funding reforms

Ensure appropriate pharmacist resourcing and governance is in place for medicines access programs and specialised supply arrangements.

Actively participate in discussions around policies and funding reforms that increase access and equity to medications irrespective of the setting of treatment and contribute to the development of mechanisms for increasing quality use of medicines and consumer safety.

### 3. Biologicals and biosimilars

Pharmacy leaders play a key part in the transition to biosimilars uptake by working with senior clinicians and staff to develop clear education and processes for managing these agents.

### 4. Dispensing and ambulatory care services adapted to improve patient access to complex medicines

Review outpatient services that would benefit from a dedicated pharmacist clinic and how that can be tied in to existing inpatient service models. Develop the financial business model that provides a neutral to cost-benefit scenario.

Understand the postcode location of patients receiving outpatient services from your hospital and what patient preferences are.

Work with stakeholder leaders to workshop how a 'patient first' attitude to medicines access could be implemented.

## PARTNER PERSPECTIVE

### Consumers Health Forum of Australia

Pharmacists and patients have seen many changes in the medicines environment. More targeted health deliveries in homes and in other community settings have brought more complexity in the Quality Use of Medicine (QUM). For consumers to optimise their health, they need greater health literacy, numeracy, and greater activation. Pharmacists then need the skills to meet patients' needs.

While there is a set of national indicators for QUM in Australian hospitals, there is no set of indicators for QUM delivery outside the hospital environment. Indicators for QUM in outpatient and community care need systemic inclusion in the development of a more personalised healthcare environment. The future will also see a more systemic role for digital and virtual healthcare in embracing personalised medications. We have already seen the advent of e-prescribing. We need connected information systems to capture and analyse real-world data which can be used to inform the future of medicines and pharmacy.

Consumers are demanding integrated care and are aware that much medication misadventure can occur as they transition from hospital into other care settings such as primary or aged care. We need to accelerate more effective discharge, interprofessional communication between hospital pharmacists and community-based providers, and models of care such as non-dispensing pharmacists in general practices.

The increase in use and dependency on medicines, devices and diagnostics means we need to rethink how we remunerate and incentivise industry, such as expedited HTA approval processes; tax incentives for businesses to make additional investments in research and development, clinical trials, and streamlined, single-point ethics approval processes, creating efficient and globally competitive access to new medicines.

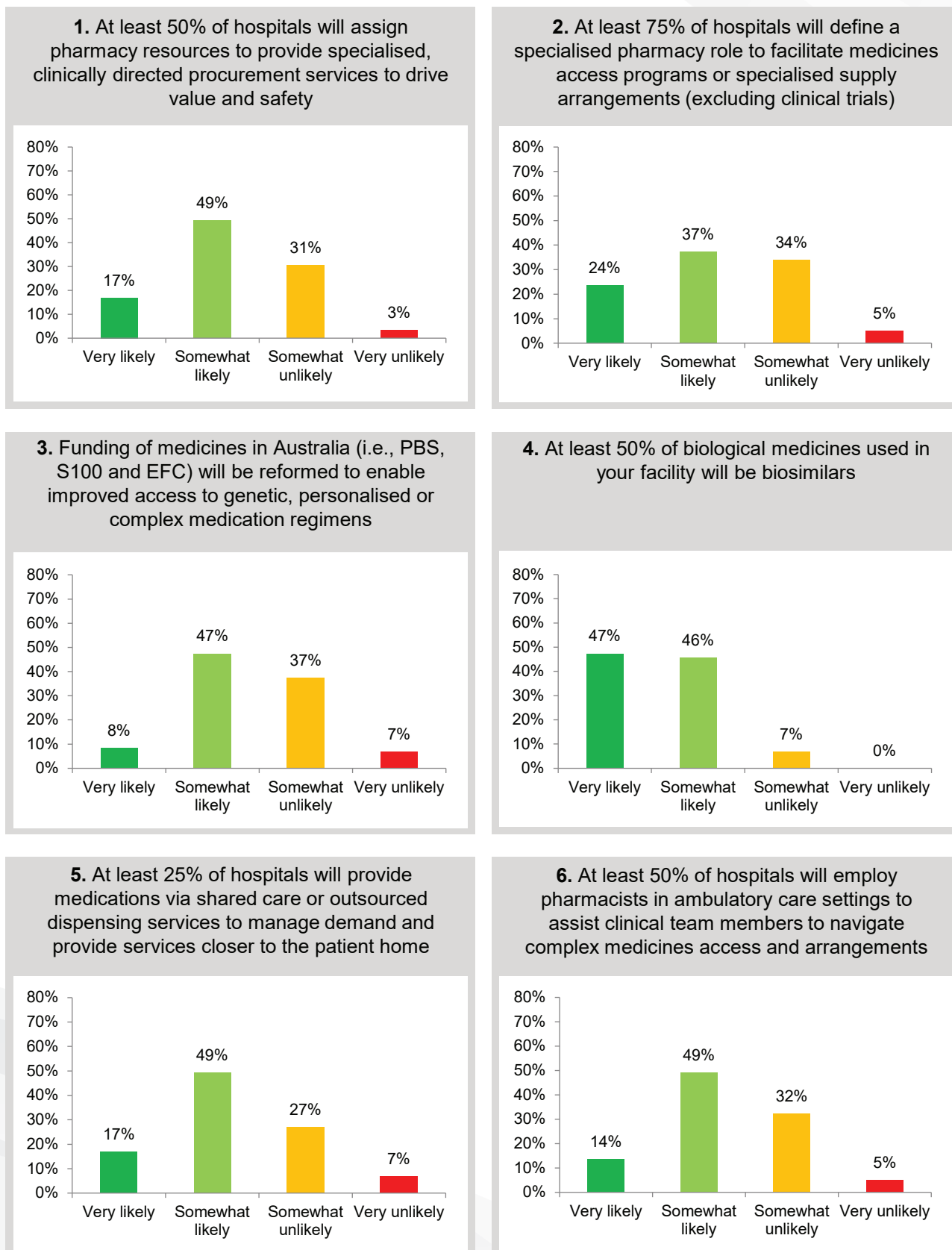
If Covid-19 has taught us anything, it is that the health of the community is inextricably linked to the economy. We need to develop guidelines and ethical collaborations with consumers and consumer organisations and we must embrace the need to continuously improve and modernise our health system, including the place and role of pharmacists in health care.

**Leanne Wells**, CEO

**Dr Penelope Bergen**, QUM Project Lead

## FIGURE 4. MEDICATION COMPLEXITY AND ACCESS, SURVEY RESULTS

Forecast Panelists' responses to the question, 'How likely is it that the following will occur by the year 2026 in the geographic region where you work?'







## 4.5 THEME 5 – MEDICATION SAFETY

**Advisory Committee Lead:** Andrew McLachlan

**Theme Leads:** Toni Howell and Daniel Lalor

### INTRODUCTION

Medication safety is currently a national<sup>1</sup> and international<sup>2</sup> priority, with a strong focus on person-centred initiatives and system-related changes to significantly reduce the burden of preventable medication-related harm. Factors that contribute to the burden of medication-related harm are multifactorial across the medication management cycle and range from the safety of medicines to high-risk situations, health system factors, clinician knowledge and behaviours through to patient factors such as clinical status and health literacy<sup>1</sup>. The WHO Global Patient Safety Challenge called *Medication Without Harm* has set the goal to reduce preventable harm from medicines by 50% over the next five years. The focus of this challenge is to reduce potential harms associated with multiple medication use, high-risk medicines, and high-risk situations (such as transitions of care)<sup>2</sup>.

The Medication Safety forecast theme explores topics covering the abroad areas of safe systems, critical documentation to support continuity of care, high value interventions and pharmacist leadership required to support contemporary pharmacy practice in 2026.

1. Australian Commission on Safety and Quality in Health Care. Quality Use of Medicines and Medicines Safety (10th National Health Priority). Discussion paper for public consultation – Phase 1: Aged care. Sydney: ACSQHC; 2020 (available at [https://www.safetyandquality.gov.au/sites/default/files/2020-09/quality\\_use\\_of\\_medicines\\_and\\_medicines\\_safety\\_-\\_discussion\\_paper.pdf](https://www.safetyandquality.gov.au/sites/default/files/2020-09/quality_use_of_medicines_and_medicines_safety_-_discussion_paper.pdf)) [Accessed 3 June 2021].
2. Medication Without Harm: WHO Global Patient Safety Challenge – Australia's response. Australian Commission on Safety and Quality in Health Care. Sydney; 2020. Available from <https://www.safetyandquality.gov.au/publications-and-resources/resource-library/medication-without-harm-who-global-patient-safety-challenge-australias-response> [Accessed 3 June 2021].

### (Q1 & Q5) PHARMACIST AS MEDICATION SAFETY LEADERS

Quality Use of Medicines and Medicines Safety was made the 10th National Health Priority Area<sup>1</sup> in 2019 by the Council of Australian Governments (COAG) Health Council. Forecast Panellists have provided an important mandate for pharmacists to transition into senior leadership roles in medication safety where the vast majority (99%) agreed it was likely by 2026. (Figure 5, Item 1).

As healthcare professionals with medicines expertise and oversight of the full medication management cycle, pharmacists are well placed to effectively lead medication safety initiatives in the health system. Pharmacists have always been actively involved in medication safety initiatives in the hospital setting, but not always in leadership roles as seen in other countries<sup>2</sup>. A critical aspect that will support pharmacists leading and achieving impact in medication safety relates to access to appropriate resources. The FPs displayed cautious optimism that the much-needed dedicated staff and resources to support pharmacists taking senior leadership roles in medication safety would be available in all healthcare environments by 2026 (Figure 5, Item 5).

1. Australian Commission on Safety and Quality in Health Care. Quality Use of Medicines and Medicines Safety (10th National Health Priority). Discussion paper for public consultation – Phase 1: Aged care. Sydney: ACSQHC; 2020 (available at [https://www.safetyandquality.gov.au/sites/default/files/2020-09/quality\\_use\\_of\\_medicines\\_and\\_medicines\\_safety\\_-\\_discussion\\_paper.pdf](https://www.safetyandquality.gov.au/sites/default/files/2020-09/quality_use_of_medicines_and_medicines_safety_-_discussion_paper.pdf)) [Accessed 3 June 2021].
2. ASHP Statement on the Role of the Medication Safety Leader, *American Journal of Health-System Pharmacy*, Volume 77, Issue 4, 15 February 2020, Pages 308–312, <https://doi.org/10.1093/ajhp/zxz292>.

### (Q2 & Q3) PHARMACISTS CHARTING MEDICAL RECORDS

The WHO Patient Safety Challenge *Medication Without Harm*<sup>1</sup> identified high-risk situations, most notably transitions of care, as a key priority in the global strategy to reduce preventable medication-related harm. Continuity of care has been a focus in health care for decades but remains a challenge in some settings. The appropriate 'handover' of care during a transition in healthcare setting, especially related to accurate health and medicines information, has been continually highlighted as a high-risk situation for patients and an ongoing challenge for clinicians and safe systems.

A major step forward in the safe and effective handover of medicines information would be for pharmacists to have direct responsibility to chart medications on admission and as part of the discharge planning. Of course, this assumes pharmacists are using their skills and experience in providing a best possible medication history<sup>2</sup>. Forecast Panellists suggest pharmacists are more likely to chart medications on discharge than on admission to hospital (Figure 5, Items 2 & 3). An optimistic result, FPs thought it was likely pharmacists would be involved in charting medicines and could meet the suggested target of 80% of patients by 2026 (Figure 5, Item 3). This has been supported by highly credible Australian research which demonstrates the substantial reduction in errors and preventable medication-related harms avoided<sup>3</sup> and has the potential to realise significant economic benefits<sup>4</sup>.

To achieve this 80% coverage of pharmacist-led charting, resources will be needed on the frontline of patient care. It is time to shift the focus from discharge medication management (seen by some as fixing medication mistakes before leaving hospital) to pharmacists getting medications 'right at the front door' and managing the entire patient journey from admission to transfer of care out of the facility<sup>5</sup>. The adage 'Planning for discharge starts on admission'<sup>6</sup> needs to take greater prominence in healthcare planning, especially when it comes to medication management. Achieving this goal will require resources and redesign of the pharmacy workforce to have pharmacists available seven days a week to provide medication reconciliation and charting services upon presentation to the hospital, at the hospital entry point, eg the emergency department<sup>7</sup>.

1. Donaldson LJ, Kelley ET, Dhingra-Kumar N, *et al.* Medication Without Harm: WHO's third global patient safety challenge. *Lancet* 2017; 389 (10080): 1680–1.
2. *Australian Commission on Quality and Safety in Health Care*, Medical reconciliation – resources for obtaining a best possible medication history (available at <https://www.safetyandquality.gov.au/medical-reconciliation-resources-obtaining-best-possible-medication-history> [accessed 2 June 2021]).
3. S Hitchen, V Sinclair, C McLennan, B Kim, C Huynh, S Tran, M Rawlins. *Safer Prescribing with Partnered Pharmacist Charting in the Acute Medical Setting*, Pharmacy Department, Fiona Stanley Hospital, Murdoch, Western Australia (available at [Safer-Prescribing-with-Partnered-Pharmacist-Charting-in-the-Acute-Medical-Setting.PDF](#) [accessed 2 June 2021]).
4. Dalton A and Deakin University evaluation team. *Health Economic Evaluation of the Partnered Pharmacist Medication Charting (PPMC) program* (2016–2018).
5. Stowasser DA, Allinson YM, O'Leary KM. Understanding the Medicines Management Pathway. *Journal of Pharmacy Practice and Research* 2004; 34, 293-296.
6. Carole Jakucs, Discharge planning starts at admission (available at <https://resources.nurse.com/discharge-planning-starts-admission> [accessed 2 June 2021]).
7. Roman CP, Dooley MJ, Mitra B. Emergency medicine pharmacy practice in Australia: a national survey. *Journal of Pharmacy Practice and Research* (2019) 49, 439–446.

#### **(Q4) DEPRESCRIBING IS NEEDED, BUT NOT YET A PRIORITY IN HOSPITAL**

Inappropriate polypharmacy<sup>1</sup> is also highlighted as a major focus of the WHO Patient Safety Challenge *Medication Without Harm*, with deprescribing<sup>3</sup> now widely recognised as a critical strategy to reduce the burden of harm, especially in vulnerable people at high risk of actual or potential medication-related harm. Pharmacists have the medicines expertise and oversight of the full medication management cycle to play a central role as part of a multidisciplinary team to address the challenge of inappropriate polypharmacy by implementing deprescribing programs in the hospital setting. Forecast Panellists expressed genuine equipoise when it came to hospitals having a program to address the challenge of inappropriate polypharmacy during a hospital admission (Figure 5, Item 4).

In part, this may be recognition that deprescribing is difficult to effectively achieve during (what can be) a short hospital stay, with many medicines targeted for deprescribing requiring careful weaning (dose reductions) and monitoring over days and weeks<sup>2</sup>. Together, it highlights that FPs may not have considered deprescribing was feasible, or even that it should be a priority during a hospital admission for the management of an acute health issue. Perhaps identifying inappropriate polypharmacy during an admission and developing a deprescribing plan for implementation by the General Practitioner after discharge, more closely reflects expectations at this stage. Emerging research highlights that use of computerised decision support tools could enhance the feasibility of deprescribing in the hospital setting<sup>3</sup>.

1. Scott IA, Hilmer SN, Reeve E, Potter K, Le Couteur D, Rigby D, Gnjjidic D, Del Mar CB, Roughead EE, Page A, Jansen J, Martin JH. Reducing inappropriate polypharmacy: the process of deprescribing. *JAMA Intern Med.* 2015 May;175(5):827–34.

2. Le Couteur D, Gnjidic D, McLachlan A. Deprescribing. *Aust Prescr* 2011;34:182–5.
3. Baysari MT, Duong MH, Hooper P, Stockey-Bridge M, Awad S, Hilmer SN. Supporting deprescribing in hospitalised patients: formative usability testing of a computerised decision support tool. *BMC Med Inform Decision Making* 2021; 21:116.

## (Q6) SMART SYSTEMS AND MEDICATION SAFETY

The uptake and implementation of electronic medication management (EMM) systems has revolutionised healthcare, motivated at least in part to realise benefits in preventing medication errors<sup>1</sup> and improving safety. Electronic medication management systems provide a unique opportunity to access, collate, view and analyse medicines data<sup>1</sup>. This becomes a powerful resource alongside trigger tools and algorithms<sup>2</sup> that can screen and identify high-risk drug-drug or drug-disease scenarios which can be flagged for timely intervention to avoid possible harmful outcomes.

There was no consensus from FPs that algorithms<sup>2</sup> embedded in EMM systems to identify people at risk of medication misadventure will be widely available in the next few years (Figure 5, Item 6). It is unclear if FPs thought this was a limitation of the current EMM systems for real-time reporting, or that the available algorithms<sup>2</sup> lacked the utility needed to be effective.

The future of healthcare<sup>3</sup> will involve the application of innovations in data science (artificial intelligence, machine learning) to better individualise the provision of healthcare and limited resource allocation. Identifying high-risk patients with data analytics at an early stage of their hospital admission, or patients who become high-risk during the episode of care (using real time algorithms) and deploying evidence-based interventions to reduce harm presents an important strategy for high impact in reducing preventable harm, improve the quality use of medicines and the judicious allocation of healthcare resources.

1. Gates PJ, Hardie RA, Raban MZ, Li L, Westbrook JI. How effective are electronic medication systems in reducing medication error rates and associated harm among hospital inpatients? A systematic review and meta-analysis. *JAMIA* 2021; 28(1): 167–176, <https://doi.org/10.1093/jamia/ocaa230>.
2. Falconer N, Barras M, Cottrell N. Systematic review of predictive risk models for adverse drug events in hospitalized patients. *Br J Clin Pharmacol*. 2018 May; 84(5): 846–864.
3. CSIRO, Future of Health, <https://www.csiro.au/en/work-with-us/services/consultancy-strategic-advice-services/CSIRO-futures/Future-Health>.

## CONCLUSION

The FP responses to the survey questions highlight that Australian pharmacists are well-placed to take senior leadership roles in the health system in the area of medication safety. The response affirms the critical role that pharmacists can (and should) play in continuity of care, especially during high-risk transitions within the health system. Innovative technologies that make use of the growing amount of health data to guide medication safety interventions and resources are not yet ready for implementation but are likely to emerge over the next decade.

## RECOMMENDATIONS

### 1. Workforce planning around medication safety

Workforce planning and training is needed to ensure pharmacists have the skills, knowledge, and attitude to take on the leadership roles in medication safety. SHPA's ATR Programs provide an ideal platform to achieve this, with a focus on developing and supporting the next generation of medication safety leaders. This would also provide the critically needed tools, standardisation and foster best practice in medication safety.

### 2. Resources to reduced medication harms at the transitions of care

Pharmacy workforce redesign is needed to ensure that adequate resources are deployed to hospital entry and exit points to take responsibility for medication reconciliation and management during high-risk transitions of care.

### 3. Building capacity in clinical informatics to inform safe systems

Expertise and training in clinical informatics are needed for pharmacists to take on key roles in system design to build and curate safe systems that make best use of health data and technology to identify and mitigate medication-related risks.

## **PARTNER PERSPECTIVE**

### **NPS MedicineWise**

As leaders in medication safety, pharmacists need to be part of the drive for continual improvement in this space. They have an important role to play in improving our understanding of our progress in medication safety, and the contribution and impact of pharmacists can and do play.

More concretely, this means pharmacists should have strong participation and representation in clinical governance, drug and therapeutic committees and jurisdictional decision-making on availability, use and safety of medicines. They should be part of national-level processes such as the PBAC, DUSC and the

TGA Advisory Committee on Medicines and be part of national level reporting on the medicines and their impact on community and hospital cohorts. Pharmacists should also be an important part of designing effective interventions in specific domains, both large and small, in both rural and metro hospitals.

Pharmacist leaders in medication safety will need skills across a broad range of areas including communication, clinical governance, clinical informatics and e health, implementation science, pharmacoepidemiology, pharmacoconomics, biostatistics and evaluation/trial methodologies.

Effective continuity of medication management at transitions of care is a priority, as it remains a significant barrier to improving medication safety across the healthcare continuum. Pharmacists need the skills and opportunities to work within the system to identify, act on and communicate on medication safety issues, and be proactive at supporting system improvements, including advancements in clinical informatics.

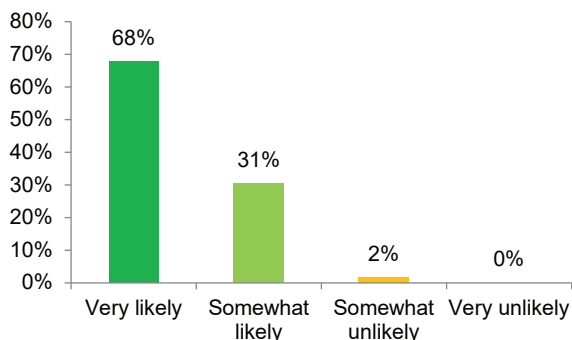
**Steve Morris, CEO**

**Bronwyn Walker, Stakeholder Relations & Policy Manager**

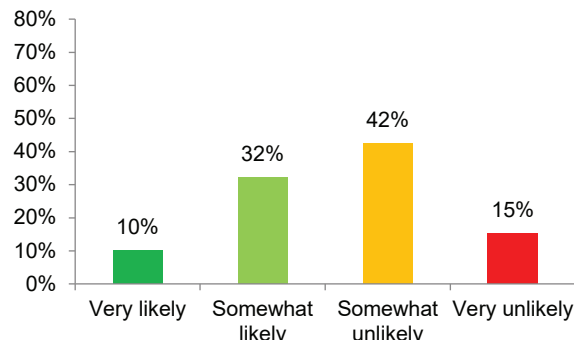
## FIGURE 5. MEDICATION SAFETY, SURVEY RESULTS

Forecast Panelists' responses to the question, 'How likely is it that the following will occur by the year 2026 in the geographic region where you work?'

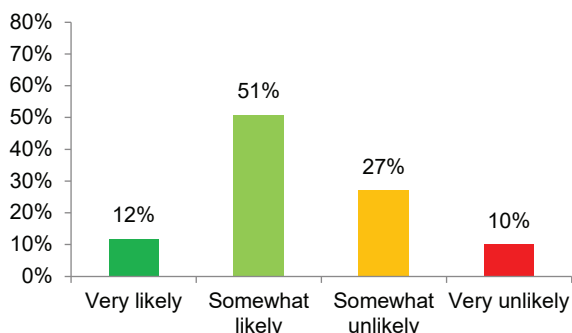
**1. Pharmacists will lead and strongly influence medication safety programs across all hospitals**



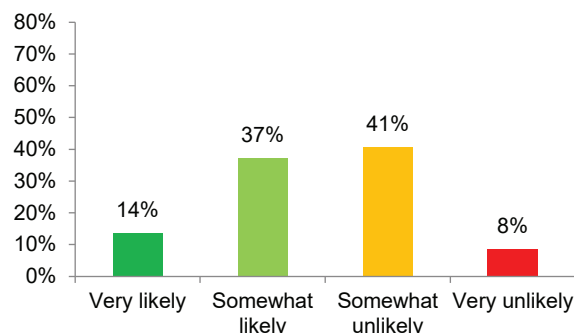
**2. 80% of patients will have their medications charted by a pharmacist after medication reconciliation upon admission to hospital**



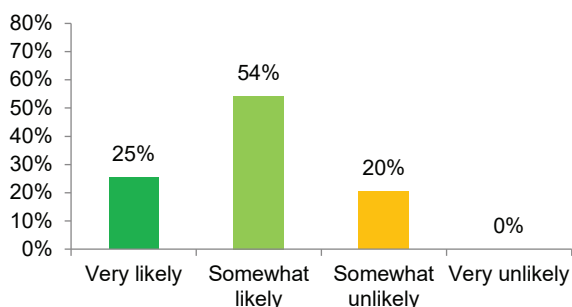
**3. 80% of patients will have their discharge medication plan prepared and added to the discharge summary by a pharmacist prior to discharge from hospital**



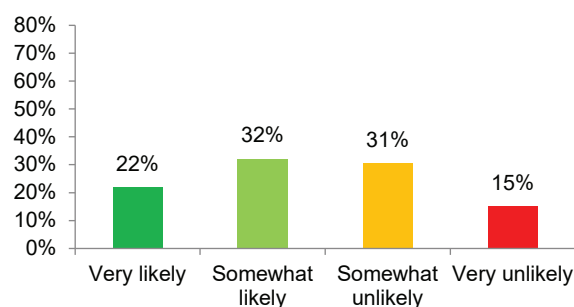
**4. All hospitals will have a program for deprescribing to reduce inappropriate polypharmacy**



**5. All hospitals, including those without an onsite pharmacy department, will have dedicated pharmacist roles to support medication safety and systems improvement activities, either in person or via remote technology**



**6. Medication harm risk prediction algorithms in the electronic medication management system will identify all high-risk patients for timely clinical intervention in real time, from admission throughout the episode of care**





## 4.6 THEME 6 – ELECTRONIC REVOLUTION

**Advisory Committee Lead:** Hao Vo-Tran

**Theme Leads:** Peter Barclay and Rosemary Burke

### INTRODUCTION

More than 30 years ago, computers were introduced into hospital pharmacies with a focus on inventory and dispensing, leading to a revolution in pharmacy practice. In 2021, imagining pharmacy workflows without computer systems is incomprehensible and it is only during rare instances of ‘downtime’ that pharmacy staff fully appreciate the shift in practices. While it may appear difficult to envisage what new technologies will be developed, future medicine management systems should continue to support our patients and staff in 2026.

### (Q1) SPECIALIST INFORMATICS PHARMACISTS

The growth of electronic systems in hospitals has led to many opportunities for pharmacists and technicians to work within this area. More than half of FPs (63%) agreed that specialised health informatics pharmacists would be driving clinical patient safety in 75% of hospitals by 2026 (Figure 6, Item 1).

A pharmacy informatics specialist pharmacist will need to have an in-depth knowledge of the functionality of multiple systems to extract relevant data and to design strategies for systems enhancement or for medication safety solutions. They may not be making the changes and developments within a clinical application, but they know what can be achieved with available functionality. They need a sound foundation in medication safety and human factors design<sup>1</sup>.

While chief medical and chief nursing information officers are becoming common in Australia, there is less attention paid to the chief pharmacy information officer<sup>2</sup>. There is great variability in the role and responsibilities of any of these positions which vary from executive level appointment positions to a senior pharmacist reporting to the director of pharmacy<sup>3</sup>. These roles may be technical in nature and/or focus more on human centred design and the clinical interface<sup>4</sup>.

To develop informatics skills in pharmacists, consideration needs to be given to expose pharmacy staff to project roles or short-term eMeds support roles to foster an in-depth understanding of the required clinical applications. There could also be an increased focus at university on the development and knowledge about digital systems, analytics and informatics. While the development of informatics specialist pharmacist positions is a necessity for the ongoing advancement of eMeds and other applications, there is always the risk that skills gained in these evolving roles will result in losing staff to related areas of clinical application support where remuneration and conditions may be more favourable. Therefore, it is essential to develop staff with the necessary skill set that work within the pharmacy department and support these roles as the specialised positions that they have become.

1. HISA. Leadership in Clinical informatics. 2018 [https://www.hisa.org.au/wp-content/uploads/2018/08/HISA\\_-\\_Leadership-Clinical-Informatics\\_FINAL.pdf?x97063](https://www.hisa.org.au/wp-content/uploads/2018/08/HISA_-_Leadership-Clinical-Informatics_FINAL.pdf?x97063).
2. 2 Kanry J, Thyvalikakath T, Poikonen J, Sengstack P. The Chief Clinical Informatics officer (CCIO). J Applied Clinical Informatics. AMIA Report. Applied Clinical informatics 2016; 7(1):143–176.
3. 3 Pitre M, Tickson N. Should Pharmacy informatics officer positions be based in, and report to, the Pharmacy Department, Rather than the health information technology Department. Can j Hosp Pharm 2011;64(6):459-461. Doi:10.4212/cjhp.v64i6.1089.
4. 4 University Hospitals Bristol. Internal business Case template. Creation of a Chief Pharmacy information officer <http://www.eprescribingtoolkit.com/wp-content/uploads/2013/11/Chief-Pharmacist-Information-Officer-Business-Case.pdf>.

### (Q2) NATIONAL ADOPTION OF ELECTRONIC MEDICINE MANAGEMENT SYSTEMS

In recent years, there have been many hospitals, predominately in NSW and Qld, that have adopted EMM systems<sup>1</sup>. This was estimated to be 30% of hospitals in 2020<sup>2</sup>. Fifty-six per cent of FPs rated it very likely that 50% of hospitals in Australia would have a system for EMM (Figure 6, Item 2).

There are several factors that influence the uptake of these systems. These include the state of adoption of an electronic health record (eMR) at the institution, and the desire to incorporate an EMM system to avoid having a 'hybrid' medical record. A 'hybrid' medical record has inherent risks and medication management is often the last module of the eMR to be introduced due to the complexity, effort to implement and the risk if not done well. An assessment of the organisational readiness to adopt EMM needs to be made to balance the benefits of EMM against the ability to manage change at the institution.

The level of maturity of EMM systems is varied. The HIMSS analytical model shows only a couple of Australian hospitals who have achieved Level 6 or Level 7 of the Analytics Electronic Medical Record Adoption model<sup>3</sup>. Level 6 requires a closed loop medication process for medication, blood and other products in at least 50% of circumstances.

1. M Baysari, Richardson L, Zheng W, Westbrook J. Implementation of electronic medication management systems in Australian Hospitals. A literature Scan. ACSQHC; 2016.
2. James Grant. E-Medications growing across the country. JPPR 2020 50(5):455–455.
3. Healthcare Information and Management Systems Society (HIMSS) <https://www.himssanalytics.org/emram>.

### **(Q3) IMPLEMENTATION OF AUTOMATED DISPENSING CABINETS**

Forecast Panellists were optimistic, where 61% expressed it was likely that 25% of hospitals will have implemented automated dispensing cabinets (ADC) for most of their inpatient medication supply by 2026 (Figure 6, Item 3).

A recent review<sup>1</sup> demonstrated the positive impacts of clinical and economic benefits of automated dispensing systems. Automated dispensing cabinets reduce the likelihood of medication selection errors by directing clinical staff to the correct product. The chances of inadvertently retrieving the wrong strength of a preparation when there are many, or making a common error related to similarly named yet different medicines is markedly reduced. An improvement in medication safety provided by these systems supports a reduction of medication-related harm, which in some instances can result in significant patient morbidity and even mortality. Furthermore, the ability to store smaller volumes of medicines, but an increased range, provides additional patient benefits through the timely access to medications which would otherwise need to be ordered from a central pharmacy due to limited storage space in a conventional hospital ward medication room<sup>2,3,4</sup>.

Medication savings achieved through the adoption of ADCs can be hard to quantify. Generally, there will be an initial reduction in overall costs due to the decreased volume of stock needed to fill a machine, however over time the usage of items remains unchanged and therefore will not impact on overall costs. Savings from ADC adoption also come from reduced wastage through greater stock rotation and efficiencies in pharmacy time achieved by having medicines available at the point of care. A fleet of ADCs will be linked by management software which provides the location of a required medicine for after-hours access while still attaching a patient and medical record number (MRN) against the borrowing transaction for follow-up.

Automated dispensing cabinets provide data to evaluate the drug utilisation on a ward or hospital level. The recording of an MRN and the identity of the staff member against each transaction allows for transparency and accountability of medication usage. Reports allow stock levels to be optimised with greater confidence using historical data on a particular ward.

Automated dispensing cabinets can be an integral strategy for deploying closed loop medication management systems. Facilities pursuing a Healthcare Information and Management Systems (HIMMS) stage 6 accreditation and above will need full ADC integration into medication management systems.

When facilities contemplate the adoption of ADCs, there can be a tendency to assume efficiencies in medication services will result in efficiencies for pharmacy staff. In reality, there is an increased burden on pharmacy departments to maintain and fill ADCs and the specialised skills needed to troubleshoot and optimise the system. These requirements should not be overlooked as part of the planning process. Nursing staff are the main stakeholders in the implementation of ADCs and they must be part of the implementation team, be responsible for the nursing workflows, and developing the relevant policies and procedures to support the use

of the ADC system. The complexity of managing medications in multiple clinical applications must be accounted for, and pharmacy staff are best placed to ensure data integration is complete.

1. Sarah Batson, Ana Herranz, Nicolas Rohrbach *et al* Automation of in-hospital pharmacy dispensing: a systematic review. *European Journal of Hospital Pharmacy* 2021;28:58–64.
2. Cottney. N. Improving the safety and efficiency of nurse medication rounds through the introduction of an automated dispensing cabinet. *BMJ Quality Improvement Reports* 2014; u204237.w1843 doi: 10.1136/bmjquality.u204237.w1843.
3. ISMP. Guidance on the Safe Interdisciplinary use of Automated Dispensing Cabinets. Institute for Safe Medication Practice 2008.
4. So J, Kaye D, Oldham H, Pickerseill D, O'Brien Williams C. Pilot of automated dispensing in an oncology centre. *J Hosp Pharmacy Europe*.

#### **(Q4) CLOSED LOOP MEDICINE MANAGEMENT IMPLEMENTATION**

The Closed Loop Medication Administration (CLMM) process incorporates a range of processes from electronic physician order, through to barcode checks of medication administered at the bedside. It has been defined as 'The use of technology in the medication management process, from ordering through to administration. Aims to minimise manual selection, input and transcription, to reduce human effort and some risks of human error'<sup>1</sup>. Closing the loop in medication management in hospitals will improve patient safety<sup>2</sup>, however, enablers such as standardised barcoding technology on unit dose packaging is needed<sup>3</sup>.

Forecast Panellists were divided on whether 10% of hospitals will have full CLMM in 2026 (Figure 6, Item 4). The near-even split of FPs in perception regarding this topic demonstrates the reality that the Australian healthcare system is on a journey to adopting CLLM practices.

An Australian healthcare system led by pharmacists will actively engage in the adoption of CLMM, as it provides greater patient safety in the area of medication administration. It is well documented that this part of the medication management cycle in the hospital setting is associated with the greatest number of medication errors.

The journey to CLMM in Australia will be an iterative process, most likely to commence in a 'hybrid' manner, using ADC technology and targeted unit dose packaging until there is a viable market for commercially produced unit dose presentations. The TGA needs to mandate the adoption of data matrix barcode standards for Australian pharmaceuticals to support CLMM.

1. Bainbridge, M., & Askew, D. (2017). *Barcoding and other scanning technologies to improve medication safety in hospitals*. Sydney: ACSQHC.
2. Burkoski V, Yoon J, Solomon S, Hall T, Karas AB, Jarrett SR, Collins BE. Leveraging technology to Elevate Safety. *Nurs Leadersh (Tor Ont)* 2019;32(SP):16–28. Doi:10.12927/cjnl.2019.25817.
3. <https://www.shpa.org.au/sites/default/files/uploaded-content/website-content/Fact-sheets-position-statement/position-statement-unit-dose-packaging.pdf>.

#### **(Q5) PHARMACY UTILISATION OF TELEHEALTH**

Telepharmacy is a modality to support the provision of pharmacy services to patients who are not currently located within the organisation providing the service. It is a way to support extended pharmacy coverage where services are not provided on weekends or extended hours and has been used more frequently overseas than in Australia<sup>1,2</sup>. The National Association of Boards of Pharmacy in the USA defines telepharmacy as 'the provision of pharmacist care by registered pharmacies and pharmacists located within US jurisdictions through the use of telecommunications or other technologies to patients or their agents'<sup>3</sup>. The America Society of Health System Pharmacists has its own statement on telepharmacy.<sup>4</sup> There are models that support in hospital care, out of hospital care, and processes such as discharge counselling<sup>5</sup>.

There are benefits in providing these services, including easy access to healthcare and the ability to service rural and remote areas<sup>6,7</sup>, however there are challenges in how these services run<sup>10</sup>, which include utilising the technology and establishing rapport with patients via telephone<sup>9</sup>. In 2020, many of these services were rapidly adopted due to COVID-19. A large majority of FPs (76%) indicated it was very likely that 30% of hospitals will conduct telehealth consultations and virtual clinical pharmacy services by 2026 (Figure 6, Item 5). In reality, many hospitals have already adopted these models. The Australian public perception has changed from face-to-face being the main way to receive healthcare, to virtual and telehealth models being embraced.



Pharmacy needs to be able to generate revenue from telehealth services to establish new services. Postal and courier delivery dispensing services require communication to confirm orders placed and other logistics, as well as a call from a pharmacist to perform counselling prior to shipping. Activity based funding has not been an easy pathway to generate income for pharmacy telehealth services. The provision of 'Virtual Hospital Services' is a developing model of care<sup>8</sup> and pharmacy services must be a part of this model of care with an established mode of funding.

1. Esteban-Cartelle H, Gutierrez RV, Fernandez-Ferreiro. Technology and Telemedicine in hospital Pharmacy, It has come to stay. 2017
2. Dhaliwall S. Telepharmacy services in Canada. Hospital News 2018;(June)34–35.
3. National Association of Boards of Pharmacy. [www.nabp.net/publications/model-act](http://www.nabp.net/publications/model-act).
4. Alexander E, Butler DC, Darr A *et al*. ASHP Statement on telepharmacy. Am J Health-Syst Pharm 2017;74:e236-41.
5. Keays C, Kalejaiye B, Skinner M, Eimen M, Neuffer J, Sidbury G, Buster N, Vincent J. Pharmacist managed inpatient discharge medication reconciliation:- A combined onsite and telepharmacy model. Am J Health-Syst Pharm;2014 (71):2159-2166.
6. WHO guideline. Recommendations on Digital Interventions for Health System Strengthening 2018 ISBN 978-92-4-155050-5.
7. Poudel A, Nissen L. Telepharmacy:a pharmacists perspective on the clinical benefits & challenges. Integrated Pharmacy Research 7 practice 2016(L5):75–82.
8. Fox BI. Technology in pharmacy practice & patient care: meeting needs and addressing opportunities. Editorial. 2019. J AM Pharmacists Assoc. 2019. [Doi.org/10.1016.japh.2019.02.002](https://doi.org/10.1016/j.japh.2019.02.002).
9. Covid-19 Critical Intelligence Unit. Evidence Check. Virtual care & telehealth for specific conditions. 2020 (28 May).
10. Almathami HK, Win KT, Vlahu-Georgievska. Barriers & Facilitators that influence telemedicine-Based, Online Consultation at Patients Homes: Systematic literature review. J Med Internet research 2020;22(2); e16407.

## **(Q6) INTEGRATION OF MY HEALTH RECORD INTO LOCAL HOSPITAL ELECTRONIC MEDICAL RECORDS**

Eighty-five per cent of FPs were optimistic about the successful integration of My Health Record (MHR) into their electronic medical record (EMR) by 2026 (Figure 6, Item 6). However, the level of integration of the EMR into MHR will need to be investigated. With respect to pharmacy related items, it is unknown whether the MHR will contain both discharge and outpatient prescription information, which is needed for accurate medication reconciliation.

As most FPs believe the MHR integration will be adopted, the quality of that data and what will be the value of this information to patients and their clinicians when they transfer to inpatient or outpatient care at Australian hospitals needs to be determined.

A key message for all patients is to ensure all their healthcare data is being uploaded into their MHR to provide the best available information for clinicians providing care.

Pharmacy departments should develop a strategy within their organisation to ensure both internal outpatient prescription dispensing information captured within their EMR and discharge prescription information to be imported into MHR.

## **CONCLUSION**

There is no doubt new technologies will be developed to help aid medication management and improve patient care. However, pharmacists should be intimately involved to ensure these technologies will emphasise continuity of care and maintain data integrity. There is an opportunity for pharmacy to demonstrate their competency in managing and maintaining complex medication related applications and systems which support the best patient safety as well as optimising business efficiency.

## **RECOMMENDATIONS**

### **1. Specialist informatics pharmacists**

Pharmacy leaders need to familiarise themselves with the growing demands for a workforce skilled in informatics. This should include a theoretical and practical basis in data, informatics, and analysis. This needs to encompass training in digital technologies, the use of technological solutions to address workforce

and health issues. This may require a willingness to second staff to other departments and roles to gain the necessary technical skills which can be brought back to the pharmacy department.

## **2. National adoption of electronic medication management systems**

Pharmacy leaders need to be aware of the developments in EMM systems and advocate for their use. They also need to be aware of the safety benefits, potential limitations and ensure user workflows meet the needs of their department. Pharmacy staff with a sound understanding of business processes must be actively engaged in any medication related implementations.

## **3. Implementation of automated dispensing cabinets**

Pharmacy leaders need to advocate for the implementation of ADCs. They need to be aware that the implementation of ADCs may require more Pharmacy staffing as the complexity of medication management systems increases and the opportunity is taken to incorporate barcode technology for medication safety.

Pharmacy leaders must work in partnership with strong nursing leadership as nurses are responsible for almost all medication administration and together, they need to drive best practice in clinical workflows and policies to support best use of the ADC system.

## **4. Closed Loop Medicine Management implementation**

Pharmacy leaders need to understand the components of a CLMM system and advocate for appropriate improvements in their workplace. Pharmacy leaders need to understand that the pathway to achieve CLMM will be different for individual institutions. Pharmacy leaders should be part of this discussion with their hospital executive. A major enabler is the adoption of data matrix barcode standards for Australian pharmaceuticals mandated by the TGA to support CLMM.

## **5. Pharmacy utilisation of telehealth**

Pharmacy leaders need to be aware of telepharmacy innovative practices and opportunities to incorporate and develop pharmacy as part of 'Virtual Hospital Services'. For telepharmacy services to be viable, an established funding pathway must be developed.

## **6. Integration of My Health Record into local hospital electronic medical records**

Pharmacy leaders need to advocate for patients to adopt the MHR, while clinical pharmacists need to be able to access the MHR and incorporate the information into clinical decisions. Pharmacy leaders need to work with their organisations to ensure that complete and accurate discharge and outpatients dispensing information is exported from their eMR into the MHR to be able to provide important information to inform clinicians managing our patients.

### **PARTNER PERSPECTIVE**

#### **Australian Digital Health Agency**

Floods, bushfires and the COVID-19 pandemic. All of these have accelerated innovation and amplified demand for digital healthcare solutions over the past two years.

The pharmacy industry helped fast-track a necessary and significant transformation in digital health service delivery through electronic prescriptions and telehealth in response to the pandemic. By the end of June 2021, more than 10 million electronic prescriptions and repeats will have been created.

This important reform was made possible by focused collaboration between jurisdictions, clinical software developers, pharmacy peak bodies like SHPA and other clinical peaks, enhancing medicines safety and enabling greater compliance with social distancing than otherwise possible.

The sheer scale of the project demanded and won widespread buy-in. It has inspired a seismic shift in perceptions of what is possible and how exciting the future of digital health can be.

The next five years in pharmacy will predictably continue to see an ongoing revolution in care delivery as we all rise to meet the challenges of a transformed world.

Digital health will continue to be a key enabler for improving access to health services across the country and particularly for people living in regional and remote locations and people otherwise marginalised by the limitations of existing service delivery models.

Emerging technologies including artificial intelligence, genomics and advanced robotics are going to drive even more remarkable reforms.

Improvements in aged care will be an immediate key focus for the Australian Digital Health Agency, with a three-year program to drive the adoption and use of digital health in residential aged care homes in response to the Royal Commission's recommendations.

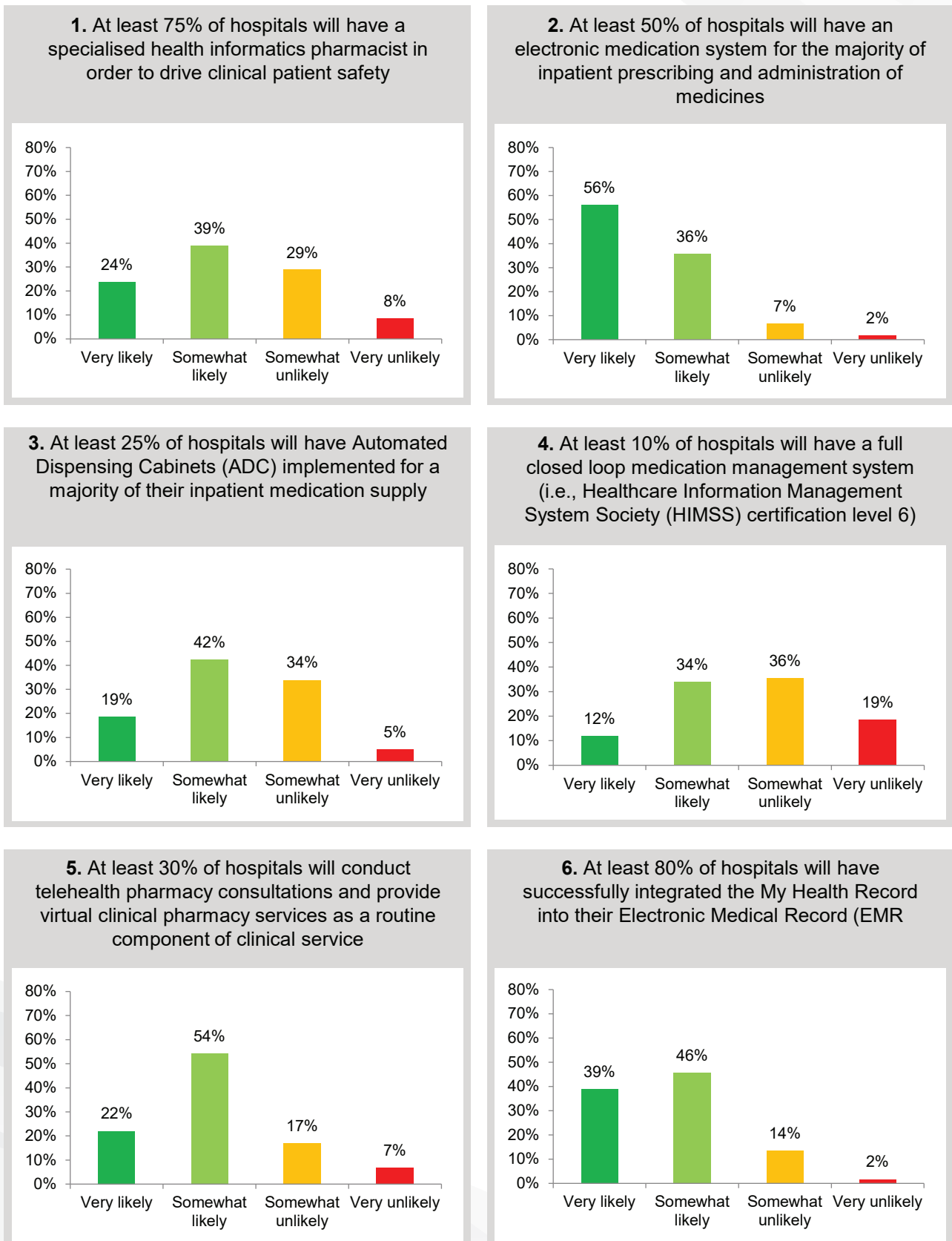
Paramount also will be building digital health capability within the healthcare workforce and ensuring associated education requirements.

Pharmacists are innovators and early adopters of digital health initiatives and they will continue to target digital opportunities that demonstrate real benefits for their patients.

**Andrew Matthews**, Director, Medicines Safety Program

## FIGURE 6. ELECTRONIC REVOLUTION, SURVEY RESULTS

Forecast Panelists' responses to the question, 'How likely is it that the following will occur by the year 2026 in the geographic region where you work?'





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