Exploring the role of hospital pharmacy technicians and assistants to enhance the delivery of patient centred care

A report to members on the findings and outcomes of the ‘Pharmacy Technician and Assistant Role Redesign within Australian Hospitals (Redesign) Project’

November 2016
SHPA vision for Australian hospital pharmacy technicians and assistants for 2026

A national environment where entry level technicians/assistants have a sound understanding of their role and access to education that supports the development of entry and advanced level competencies. Where technicians/assistants can undergo credentialing for specific practice areas with national certification, enabling movement between hospitals across Australia. Where technician/assistant leaders are grown from within to assist in the ongoing development of the profession, working in partnership with pharmacists to provide enhanced patient care.

1 Project Summary

To continue to deliver effective health care that meets the needs of the public, the pharmacy workforce must evolve to ensure it has the capacity, capability and flexibility to function within an ever-changing healthcare system. Commissioned by SHPA Federal Council in 2015, the ‘Pharmacy Technician and Assistant Role Redesign within Australian Hospitals (Redesign) Project’, aims to inform this workforce change.

The practice of hospital pharmacy in Australia is changing. Economic pressures and increasing healthcare requirements from patients demand that the health workforce is used effectively and efficiently. The advancing role of hospital pharmacists is a key driver for discussion around progression of the role of pharmacy technicians and assistants in the Australian hospital setting as identified at the 2014 SHPA Future Summit.

As pharmacists progressively move away from dispensary based supply functions and transition to team based patient-centric roles out of the dispensary, the need to effectively harness the technician and assistant workforce to support advancing hospital pharmacy services strengthens. At the Future Summit a key outcome focused on expanding the scope of practice of pharmacy technicians and assistants to enable the development of future models of clinical practice.

Implementation of technology in the pharmacy sector, including dispensing robotics and e-health, add to the factors influencing the changing roles of the hospital pharmacy workforce in Australia. With technology advancing and being utilised more broadly, it is important to begin to consider future workforce implications and anticipate future change to maximise workforce development opportunities.

Further drivers for this work include a realisation that Australian hospital pharmacy technicians and assistants are underutilised compared to their OECD peers, and acknowledgement that there are only limited opportunities for pharmacy technicians and assistants seeking career advancement in Australia.

The Redesign Project was undertaken over a 6-month period (at 0.4FTE) from March to August in 2016, with the content of this report developed from a series of carefully
planned activities including: a literature review, a review of supporting frameworks and primary research (national survey, focus groups, structured interviews and mini case studies). The final outcome of this was a comprehensive White Paper for discussion by SHPA’s Federal Council to inform future planning and activity in this area.

This report for SHPA members provides a summary of the White Paper and the project’s understanding of hospital pharmacy technicians and assistants in the Australian health environment, promoting discussion among members that will guide SHPA in its role as a professional society in this changing landscape.

1.1 Key themes in the report

- Pharmacy technicians/assistants are employed in 95% of hospital pharmacies across Australia.
- Pharmacy technicians/assistants are important to the provision of pharmacy services to patients in Australian hospitals and can be instrumental in increasing availability and impact of these services.
- There is a large variation of activities undertaken by pharmacy technicians/assistants in Australian hospitals with some hospitals utilising pharmacy technicians/assistants more widely and with greater responsibilities than others.
- Pharmacy legislation, awards and enterprise bargaining agreements have been developed independently in each state and territory in Australia with significant differences and limited similarities.
- Unlike the pharmacist workforce, the pharmacy technicians/assistant workforce is not regulated nationally.
- Rural and remote environments pose particular challenges for the delivery of pharmaceutical services in Australia with pharmacy technicians/assistants playing a significant role.

1.2 Overview of the current roles and influencing frameworks in Australia

This summary provides a broad overview of the results collected as part of the project’s key stakeholder engagement activities. It draws on the themes identified in the literature review, national survey, focus groups, structured interviews and mini-case studies undertaken as part of this project.

1. Roles and responsibilities of hospital pharmacy technicians and assistants vary significantly in Australia with the workforce largely participating in activities focussed on technical tasks rather than patient focused clinical tasks.

2. Limited career structure and the lack of opportunities to advance practice stifle the development of this workforce in Australia.

3. Although there is a national education system in Australia, the education requirements for employment of hospital pharmacy technicians and assistants are
set by state and territory based legislation and enterprise agreements, with no consistency.


5. Stakeholder engagement noted the role for SHPA in setting national standards for employment with respect to the education and training requirements of hospital pharmacy technicians/assistants. In addition, SHPA could have a role in accrediting qualifications and credentialing individuals that undertake the qualifications to ensure a consistent quality of practice that meets standards. Extension of this role into an advanced practice domain for hospital pharmacy technicians and assistants is expected to follow.

6. The pharmacy technician and assistant workforce is not regulated nationally, excepting guidelines and standards from professional bodies that mention pharmacy technicians and assistants but are not legislatively enforced. Legislative and industrial changes if required are the responsibility of the states and organisations to which they apply. SHPA can advocate for legislative and industrial change but not be directly involved in jurisdictional industrial negotiations.

1.3 Consideration of global context in identifying key areas for development in Australia

As pharmacy technician and assistant roles have evolved internationally, so too have the supporting education, training and regulatory frameworks. International pharmacy workforces have demonstrated that mandatory regulation, inclusive of mandatory minimum qualifications can aid in the development of this workforce. Such supports create minimum standards in roles and support the development of advanced roles from a uniform baseline of training and education.

Regulation via a professional body would create standardisation and enable development of hospital pharmacy technicians/assistants. As demonstrated in the UK, advanced technician roles are built on the foundation of professional regulation and training which resulted in the registration of technicians.

Mandating education and training, accreditation of qualifications and credentialing of individuals will standardise roles and responsibilities provided across Australia. With appropriate supporting education and training, the development of roles from a uniform baseline will also create a more structured career path for hospital pharmacy technicians in Australia. Expansion into advanced practice domains should follow which will ultimately shift the roles and responsibilities of technicians and assistants across Australia.
Professional bodies will also need to review and update standards and guidelines that support pharmacy technician/assistant roles and remove statements that obstruct their development in order to advance this workforce.

1.4 The future
- There is a strong belief from Australian hospital pharmacy stakeholders that pharmacy technicians/assistants can have a greater role in technical activities, including the clinical support tasks within clinical activities, under existing legislation.
- Any development of pharmacy technicians/assistants must involve pharmacists, who may need to be socialised to the use of pharmacy technicians/assistants as part of the pharmaceutical services team.
- Training and education quality, consistency and availability, needs to be improved.
- Barriers to development include human resources, sourcing technicians/assistants and the limited number of full time equivalent positions.
- Significant change is possible under current arrangements at the individual hospital level where the Director of Pharmacy is able to effectively engage with ‘levers of change’, including the hospital executive, human resource departments and consider financial implications.
- Hospital pharmacy departments are requesting: ‘advocacy tools and management supports’, ‘professional standards and competencies’, ‘quality standardised education’ and ‘finance’ to assist in pharmacy technician/assistant role redevelopment.
- Key stakeholder feedback was that consistency of regulation was required to allow the same skills to be developed to grow roles across Australia.
- Expanded scope of practice roles for pharmacy technicians/assistants that the Australian hospital pharmacy workforce would like to engage in include:
  a. Clinical roles including medication reconciliation, counselling and inpatient unit technician
  b. Accuracy checking technicians
  c. Technician led dispensaries
  d. Research, data collection and education
  e. Dispensing and imprest management.

1.5 Opportunities for SHPA in Pharmacy Technician and Assistant Role Redesign
SHPA is well positioned to consider taking a leadership role among stakeholders as standards for pharmacy technician/assistant roles and associated activities are defined, and competencies are developed through appropriate quality supportive training. SHPA could also consider adopting the professional regulatory body role for pharmacy technicians and assistants in Australia. This will enable pharmacists to engage in advanced clinical activities and support the development of an improved professional environment for pharmacy technicians/assistants.
The following possible opportunities for SHPA were suggested by participants:

- To create a national standard definition of roles, competencies and a framework for credentialing (defining the baseline and advanced technician/assistant roles).
- To influence the education system, create standardisation, mandatory training and continuing education requirements that meet workplace needs.
- To accredit courses and/or administer credentialing exams.
- To be a registered training organisation delivering national qualifications.
- To enable the discussion for change within the hospital system.
- To provide leadership through a change management process.
- To advocate to government regarding technician/assistant roles in hospital pharmacy services.
- To continue to provide ongoing continuing professional development offerings.
2 Priority recommendations

SHPA Federal Council would like to firstly express its sincere appreciation to the Pharmacy redesign project committee and project team, and particularly recognise the efforts of its Chair Trudy Teasdale and the Project Officer Rachael Raleigh.

The following recommendations from the Project were considered by SHPA Federal Council:

1. Update current SHPA Standards and workforce definitions available in the SHPA Standards of Practice for Clinical Pharmacy Services
2. Develop an Australian pharmacy technician/assistant competency standards framework and explore SHPA’s role in credentialing individuals for defined competency areas from entry level to advanced level
3. Hospital pharmacy technician/assistant leadership development

In addition, SHPA Federal Council discussed other options to further influence national standardisation in continuing education and mandatory training. It will also focus on the support required from SHPA to help broaden the level of innovative and advanced practice across Australia (as demonstrated by the example case studies included in this report).

Following on from the consideration of the final White Paper by SHPA Federal Council, plans for future activity to advance this area of strategic workforce advocacy and capacity enhancement will be developed. Council will report back to the membership on plans for this area of work by the end of 2016.
3 Case studies of Pharmacy Technician roles

These mini case studies are included to highlight some of the progressive practice roles Australian pharmacy technicians/assistants are gradually adopting across Australia in response to the evolving requirements of hospital pharmacy services.

These case studies highlight the importance of well-trained pharmacy assistants and technicians across a range of hospitals in Australia. Study sites were selected based on geographical location, AIWH Peer Group Classification and survey response to ensure representation across a range of Australian hospitals.

3.1 Major City - Principal Referral Hospital: Royal Brisbane & Women’s Hospital (Queensland)

Adapted from a case study contributed by Assoc. Prof. Ian Coombes (Director of Pharmacy) and Rachel Merigan (Pharmacy Assistant Team Leader), Royal Brisbane and Women’s Hospital.

Overview

The Royal Brisbane and Women’s Hospital is a 900 bed tertiary referral teaching hospital with 2.5 pharmacists to one assistant/technician. The pharmacy assistant team operate in various dispensaries/satellites across the hospital and in some locations are responsible for all the workflow that takes place. These locations are imprest area (stock picked and prepared all on site), controlled drug vault, clinical trials satellite, mental health centre outpatient pharmacy, cancer care outpatient pharmacy, cancer care aseptic production unit, women’s and newborns satellite, general medical and surgical satellite and the main outpatient pharmacy.

The composition of the pharmacy assistant team is as follows:

- 18 X Pharmacy Assistants (full and part time)
- 6 X Advanced Scope Pharmacy Assistants
- 1 X Senior Pharmacy Assistant Team Leader

Technical roles completed by pharmacy assistants at RBWH include:

- Imprest, controlled drugs, dispensing inpatient, discharges, outpatients
- Generation of Med Action plans, discharge medication action plan, from clinical pharmacist history and reviewed/authorised by a clinical pharmacist
- Manufacturing of aseptic medications
- Manufacturing of pre-package medications

The RBWH has advanced scope pharmacy assistant positions that are relatively new. These positions can work in the areas listed in above but these pharmacy assistants have undertaken further education to work in higher skilled roles, these are;

- Ambulatory services for Chronic Kidney Disease patients and cancer care patients reviewing own medicines and gathering information from primary care community pharmacies and nursing homes for review and interpretation by clinical pharmacists
- Project support for implementation of service redesign re drug supply: Direct to ward delivery and implementation of automated medication distribution systems
- Ward based assistant funded by service lines, cancer care, internal medicine and renal medicine. Operating on the wards, with patient interaction and medication supply being a strong objective. This role ensures that pharmacists are given more time to conduct better clinical services.
• Education and training assistant that operates at 0.5 per week (the other 0.5 is ward based). This role works closely with the senior pharmacy assistant team leader to support the assistant team with best practice initiatives for the technical workflow. Facilitates in creating and maintaining individual portfolios, as well as conducting strong orientation for new and existing employees.

Education requirements
• Minimum of certificate III in Pharmacy (community based) with the emphasis to enrol into certificate III hospital pharmacy services, as this is preferred.
• Minimum of certificate IV (hospital services) or equivalent for any advanced scope pharmacy assistant positions
• Monthly clinical education provided by pharmacists
• Use of annual Advanced Technician Level Framework (developed by Queensland Safe Medication Practice Unit based on the UK Competency Development and Evaluation Group (CoDEG) tools available) by trained pharmacy educators – who work 0.5 FTE as clinical ward based assistant
• Annual imprest competency checklist and completion
• Annual dispensing competency checklist and completion
• Annual validation (must pass) for aseptic manufacturing and cytotoxic medication production

Expanded scope of practice roles/projects
• Chronic Kidney Disease assistant working in dialysis units and outpatient clinics reviewing patients own medicines, taking medication histories from community pharmacies, residential aged care facilities etc.
• The cancer care advanced scope ward based assistant position was originally a pilot and has very recently been made permanent. In the pilot phase data was collected which provided strong findings of better service delivery from the pharmacy department to cancer care services. This has led to other similar advanced scope pilots currently in the department; it is hoped that these position will become permanent too and lead to further advanced scope roles.

Current or emerging challenges regarding pharmacy assistant/technician progression
• About to undertake checking technician pilot
• Recruitment of suitably trained staff (using UK trained/credentialed staff)
• Lack of widely available hospital certificate III and IV courses.

The lack of opportunity to embark in further education at a certificate III and IV level in hospital pharmacy services is a big concern. The desire for career progression is a big focus for the pharmacy assistant team and is actively supported by all in the RWBH pharmacy department however; there is a lack of education available to provide this. Many jobs (especially the advanced scope positions) are given to staff that have better education and experience behind them and they are usually from the UK. It is very disheartening that pharmacy assistants who have commenced employment in Australia are not able to access the same type of learning. The future of the pharmacy assistant/technician workforce has the potential to create stronger skillsets that aren’t at a pharmacist clinical level but would greatly assist in pharmacists’ time management to provide better service delivery. The feedback from many pharmacy assistants is that they want that opportunity but unfortunately are not able to access it, but note these opportunities exists outside Australia.
3.2 Outer Regional – Public Acute Group B Hospital: Port Augusta Hospital (South Australia)

Adapted from a case study contributed by Tasma Wagner, Chief Pharmacist, Port Augusta Hospital.

Overview
The Port Augusta Hospital pharmacy services up to 80 acute beds with paediatric, obstetric, gynaecological, surgical, emergency unit and general medical units. It also includes a satellite renal dialysis centre (36 patients) and oncology services (6 chairs). Staffing consists of 4 FTE pharmacists, 3 FTE technicians and 1 FTE intern pharmacist. Outreach service (clinical and distribution) provision to a number of smaller hospitals within region.

Technical roles completed by the technicians include:
Stock maintenance, distribution services (to ward and to outreach sites), stock usage monitoring and reports, imprest reviews, pharmacy product file maintenance, financial billing extract assistance, PBS claiming, accreditation activities (cold chain monitoring and reporting, APINCH drug monitoring).

Expanded scope of practice roles/projects
Clinical roles technicians undertake include renal dialysis unit patient follow up of adherence issues and medication profile maintenance for chronic disease aboriginal patients in remote areas.

Innovative roles pharmacy technicians are utilised for include, outreach service provision. Technicians assist to maintain adequate stock levels, ordering quantities and storage advice to remote outreach clinics. Where appropriate they also visit remote sites to maintain stock holding requirements and monitor storage conditions. They assist with medication profile maintenance for patients in remote sites (such as Oodnadatta and Marree). General enquiry answering particularly with regard to access to medications remotely (with referral to pharmacists as well) is also completed by the technician.

Education requirements
Training is provided in the form of online SA Health training, dispensing training (ad hoc), medication profile maintenance training (train-the-trainer), NPS high risk medicines training on line, cytotoxic handling and dispensing training (on line modules) and clinical handover training.

Acknowledge the need to conduct projects on technicians working in rural hospital settings due to the multi-task nature of their role and expanding scope of practice. There is no formal training pathway for career progression and technical staff are limited in how they can advance their career.

Current or emerging challenges regarding pharmacy assistant/technician progression
With the right training pharmacists could be assisted with medication history taking activities (technicians could assist to locate secondary information sources), medication profile creation (technicians could draft profiles for final pharmacist review), medication safety and auditing activities (dose reconciliation etc.) and more formalised process for assisting with hospital accreditation activities.
3.3 Major City – Public Acute Group A Hospital: Calvary Public Hospital (Australian Capital Territory)

Adapted from a case study contributed by Emily Diprose (Lead Pharmacist) and Sarah Smith (Lead pharmacist), Calvary Public Hospital Bruce, ACT.

Overview
Calvary Public Hospital Bruce comprises a 256 bed general hospital as well as a 19 bed hospice located off the main campus. We are a teaching hospital of the Australian National University, The University of Canberra and the Australian Catholic University. The hospital is funded by ACT Health Directorate and managed by the Little Company of Mary Health Care. The hospital provides a range of inpatient, ambulatory care and outreach facilities and services.

Pharmacy assistant/technician technical roles:
There are 6.5 technical officer positions (including our purchasing officer) and 1 administrative services officer position out of 28 FTE positions. Our technicians are involved in the following:
- Prescription processing including the dispensing of prescriptions for inpatients, patients on discharge and outpatients, and the preparation of medication profiles.
- Sterile and non-sterile compounding of pharmaceuticals
- Pre-packing and labelling of pharmaceuticals
- Servicing the ward imprest system, re-stocking the afterhours cupboard, filling medication requisitions, and delivering medications to wards
- Inventory management through sorting and crediting stock, assisting in ordering and receipt of pharmaceuticals and undertaking stocktakes
- Housekeeping activities including record keeping, archiving, filing and tidying and stocking shelves.
- Ward management of medications dispensed from pharmacy – ordering non imprest items.

Pharmacy assistant/technician clinical roles:
Technicians at our site working in our ‘Ward Technician’ role undertake the following clinical activities
- Medication chart annotation and chart rewrite checking
- Identification of any inappropriate prescriptions (e.g. illegible, prescribed medication not on formulary, patient allergic, dosage error) to be followed up by ward pharmacist

Expanded scope of practice roles/projects
Technicians at our site rotate through our ‘Ward duties’ role. While the current role predominately focuses on supply of medications, it is a step towards future clinical duties as staffing allows. In this rotation, the technician (once credentialed) performs the following:
- Medication chart annotation and re-write checking
- Management of individually supplied (i.e. non-imprest) medications
- Storage and labelling of patients own medications
- Transfer of individually dispensed medications if patients are transferred between wards
- Return or disposal of medications on patient discharge
- Review of medications storage within the medication rooms (including the refrigerator) and return or disposal of ceased medications
- Flagging of any inappropriate prescribing with ward pharmacist

This role is based on a project from 2011, a prospective, two-phase, observational analysis of time invested by a pharmacist performing ward duties was conducted over two five-week
Phase one data was collected when a pharmacy technician was not present on the ward. A pharmacy technician was then trained for three weeks to conduct ward duties which included medication supply, pathology screening and discharge facilitation and planning. Phase two was conducted with the presence of a ward-based technician for two hours each day. Time-activity ratios were recorded. Interventions and their severity were recorded in accordance with SHPA classification of pharmacy interventions. This project showed an increase in time spent by the pharmacist on medication history taking (+7%), discharge (+6.6%), clinical review (+5.4%), liaising with Medical officers (+3.6%) and patient counselling (+1.8%) during phase two. A decrease of 23.4% was seen in time spent by the pharmacist on medication supply. A 47% increase in interventions was achieved when a technician was present, and 82% of all phase 2 interventions were related to therapeutic or prescribing recommendations compared to 18% relating to cost and formulary issues. Moderate and major (level 3 and 4) interventions made by the pharmacist increased by 28% during phase two. This was presented at a Medicines Management conference (both paper and poster).

**Education requirements**
There are no formal educational requirements required to be employed as a technician at our site. Holding a certificate III or IV in hospital pharmacy practice is highly desirable.

Technicians undertaking our ward role are credentialed before undertaking ward duties. This credentialing is done by our senior technician (TO2). The technician being trained observes the duties being undertaken before a period of supervised work and then final credentialing.

Technicians working in aseptic dispensing are trained and validated by a pharmacist experienced in this area. This involves a number of theoretical sessions followed by a number of practical sessions in the IV room before final broth testing validation.

**Current or emerging challenges regarding pharmacy assistant/technician progression**
Balancing technical and clinical roles to keep the job attractive and to be able to recruit highly motivated staff is currently challenging. With attempts to expand technician roles, also comes managing concerns from pharmacists around levels of training and credentialing, particularly when clinical activities are involved.

The shortage of experienced, hospital trained pharmacists we have encountered at our site has had a huge impact on our staffing levels, as well as the training and induction burden of new pharmacist staff with little or no hospital pharmacy experience. Technicians being able to undertake extra duties on the ward (medication counselling, medication history taking), may alleviate some of these issues.
3.4 Major cities – Private Acute Group A hospital: Norwest Private Hospital (New South Wales)

Adapted from a case study contributed by Rhiena-Jius Villegas (Pharmacy Manager), Anjana Rao (Client Engagement Manager), Norwest Private Hospital, Bellavista and Alan Tuxford (Associate Partner/Regional Operations Manager), Hospital Pharmacy Services (HPS), Victoria

Overview

The Norwest Private Hospital services 204 beds with clinical pharmacy services provided to areas such as emergency, intensive care, coronary care, cardiology, medical, surgical, orthopaedics, maternity & special care nursery units. The pharmacist to technician ratio in the hospital is 1.5 to 1.

The technical roles that pharmacy assistants/technicians undertake include, dispense, imprest management, inventory management, drug distribution, deliveries, PBS prescription and claim management, hospital store/supply department liaison, account and billing management & support.

Clinical roles provided by technicians include medication history administrative support – high risk patient flag, antimicrobial stewardship (AMS) administrative support – traffic light referral register system, wards rounds for medication supply referral, identification and action, document clinical administrative support activities via electronic pharmaceutical care support system - ClinPod™.

Expanded scope of practice roles/projects

a. Medication History administrative support – high risk patient flag

All newly admitted patients are assessed for medication management risk status by the attending clinician (i.e. nurse, pharmacist, doctor). All high risk patients are referred to the clinical pharmacist and ward technician. The ward technician will liaise with the patient/carer and contact the patient’s referring doctor, GP and/or local pharmacy to obtain and file a copy of the latest medication profile/list and/or dispensed medication history for medication reconciliation purposes.

b. Antimicrobial Stewardship administrative support – traffic light referral register system

All antibiotic medication orders are identified by the ward technician and then documented for referral to the clinical pharmacist and AMS nurse via the ward’s AMS register. The referral is flagged by the ward technician according to traffic light system categorisation i.e., green, amber, red (all red flag antibiotics are referred to the infectious diseases (ID) team).

c. Wards rounds for Medication Supply Identification and Action

Ward technician conducts ward rounds moving from bed to bed to review inpatient medication charts to identify new admissions and new medication orders. Ward technician subsequently alerts the clinical pharmacist via a referral process to the existence of a new order(s) for review. All medication orders that have first been reviewed by the clinical pharmacist and subsequently approved for supply, will be identified on the ward technician ward round and actioned via the inpatient dispensary. The ward technician will liaise with the patient to determine and record health care/safety net card status, preferred brand, billing requirements and health fund status.
d. Document all clinical administrative support activities via electronic pharmaceutical care system - ClinPod™

Ward technician records all activities performed per patient against each patient’s electronic pharmaceutical care record, in real time utilising ClinPod™.

**Education requirements**

Completion of the Certificate III/IV Community Pharmacy or have completed the Guild Pharmacy Technician Course (would prefer Certificate IV in Hospital Pharmacy). Completion of pharmacy orientation/induction program that includes all eLearning modules. One on one, on-the-job training with mentor and for the ward technician role – the ward technician must be a high performing staff member with at least 12 months experience of the Norwest Private Hospital Pharmacy and have completed an intensive ward technician training program with supervised practice and review.

**Current or emerging challenges regarding pharmacy assistant/technician progression**

Recruitment of trained and experienced staff, retention of trained and experienced staff, and the development of a career path with suitable roles that recognise skills, training, capability and experience. Suitable structure of the enterprise agreement to reflect career path and funding and recognition of new technician roles is also a current challenge in progressing this workforce.

Currently facing increasing demand for expanding comprehensive clinical pharmacy services with finite clinical pharmacist resources in the face of increasing hospital activity. As a result of the above there is increasing need to relieve the clinical pharmacist from as many administrative/technical functions required of the clinical service so that the clinical pharmacist activities are targeted to achieve the greatest outcome. However for this to occur, clinical pharmacists must first have confidence in the skill set of an ‘advance practice’ technician which will require strong and effective leadership to develop.
Acknowledgements

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