Chapter 9: Staffing Levels and Structure for the Provision of Clinical Pharmacy Services

INTRODUCTION

The primary consideration when establishing and maintaining a staffing structure for clinical pharmacy services is to provide patient-centred quality care that ensures the safe and effective use of medicines.

The structure and skills mix of staff required to deliver clinical pharmacy services will be determined by what is included in the pharmacy service agreement (documented or implied) for the organisation and for specific units or wards, the size and type of organisation and the casemix.

These standards detail the activities a pharmacist undertakes to support an individual patient's medication management plan (MMP), i.e. optimisation of medicines for that individual. Therefore, staffing levels for clinical pharmacy services have been calculated on providing activities that ensure the safe and effective use of medicines for individual patients. Pharmacy services should be available 7 days per week and for extended hours during the day.

This level of clinical pharmacy service delivery is required to support:

- the *Guiding Principles to Achieve Continuity in Medication Management,* which highlight the need for: medication history (medication reconciliation), assessment of current medication management, medication action plan (now known as MMP), providing information to patients and the transfer of verified information about medicines use on discharge or transfer[1]
- the *National Safety and Quality Health Service Standards,* standard 4 medication safety, which highlight the need for MMPs for individual patients with medication reconciliation on admission and discharge or transfer, clinical review of medications during the admission and the provision of information to patients[2]
- the *Australian Safety and Quality Goals for Health Care: Medication Safety Action Guide,* goal one, which aims to reduce harm to people from medications through safe and effective medication management.[3] Effective evidence-based strategies to improve medication safety include the use of clinical pharmacists to perform medication reconciliation on admission and discharge (to improve continuity of medication across sectors and settings) and review medications during hospital admission.

Information on the workload that is manageable by one pharmacist allows managers to allocate resources to achieve agreed levels of service delivery. Time–motion data from an Australian study was used to calculate the number of patients/inpatient beds that a single pharmacist (one full-time equivalent) could provide clinical pharmacy services for based on the time taken to provide each clinical pharmacy activity.[4,5] These data were used to develop the staffing levels for clinical pharmacists published in 2010.[6] These have been recalculated using recently published length-of-stay data.[7]

STRUCTURE FOR PROVIDING SERVICES

Clinical pharmacists may provide services based on designated beds or a designated clinical unit. Aligning services based on clinical units has been shown to be of benefit.[8] Advantages of a clinical unit-based service include:

- typically lower patient-to-pharmacist ratio
- proactive pharmacist involvement with the interdisciplinary team
- clinical pharmacy activities are care plan based and for the individual patient
- improved communication with medical staff
- development of specialist knowledge and skills
- facilitating pharmacist's patient advocacy role across the continuum of care
- easier to educate and train intern pharmacists and students
- educational role of the pharmacists more easily integrated across disciplines
- facilitates involvement in collaborative research.

Disadvantages of a unit-based service include:

- complex scheduling/coverage needed for after hours services or weekends
- higher staffing requirements because of a lower patient-to-pharmacist ratio
- difficult to implement in all types of health service organisations
- significant overlap of clinical pharmacy services within the wards or settings creating inefficiencies
- more person-specific than department-specific
- may leave distribution activities to other pharmacists
- increased travel time and reduced time available for service delivery when a unit's patients are on different wards throughout the organisation or wards are considerable distances from each other.

Wherever possible, clinical pharmacy services should be allocated in parallel with medical units rather than ward-based in parallel with nursing services. Patients, no matter on which ward they are located, are better serviced clinically when their care is provided by the appropriate medical unit and by extension the clinical pharmacy services. However, ward-based services are easier to staff and maintain and provide a close working relationship with nursing staff.[8]

Suitably trained and qualified pharmacy assistants and technicians and other support staff must be available to perform non-clinical functions, such as medicine acquisition and distribution, manufacturing and data entry.[9] Pharmacy technicians can also directly support clinical pharmacists, see *Chapter 12: Pharmacy assistants and technicians supporting clinical pharmacy services*.

The notion of a 'pharmacy team' where the pharmacist concentrates on providing clinical services and the pharmacy technician ensures the medicines are available in the patient care area and on discharge as well as supporting the pharmacist has been shown to be efficient and effective and is now considered an optimal service delivery model. See *Chapter 12: Pharmacy assistants and technicians supporting clinical pharmacy services*

Additional resources should be dedicated for other related activities such as clinical pharmacy management, drug protocol management, antimicrobial stewardship, relevant to the scope and size of the clinical pharmacy service. See *Chapter 14: Improving the quality of clinical pharmacy services*.

Additional resources are also required to allow dedicated time for training and education, research and involvement in other clinical pharmacy services to support the *National Medicines Policy*.[10] See *Chapter 10: Training and education* and *Chapter 11: Participating in research*.

PHARMACIST STAFFING LEVELS

Three major factors drive changes to the staffing levels for clinical pharmacy services. These include:

1. range of clinical pharmacy services required and expected by patients, funders and boards of management
2. complexity of care required (linked to patient age, range and number of diagnoses, and number, range and type of medicines used)

Table 9.1. Pharmacist staffing levels for provision of clinical pharmacy services based on 'overnight beds'

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

FTE = full-time equivalent.
*Service on a weekend (assuming few admissions and discharges and medication chart review only) would require an additional 2 to 2.5 hours per day.

Table 9.2. Pharmacist staffing levels for provision of clinical pharmacy services based on the number of patients per day

Category	Patient/service type	No. of patients to 1 FTE pharmacist for clinical pharmacy services per day*
7 Critical care units, high dependence on medicines	All critical care units, extensive burns, tracheostomy, extra corporeal membrane oxygenation	10
8 Review and advice on medicine usage – with urgency	Emergency,† Medical Assessment and Planning Units, Short stay acute medical assessment units <48 h	10
9 Review and advice on medicine usage – ambulatory	Pharmacists providing review and advice on medicine usage services in Allied Health and/or Clinical Nurse Specialist Interventions clinics - Tier 2 Non-admitted Service 40.04[11]	5
10 Review and advice on medicine usage – outreach services	Pharmacists providing review and advice on medicine usage services in Allied Health and/or Clinical Nurse Specialist Interventions clinics - Tier 2 Non-admitted Service 40.04 as outreach service or in the patient's home[11]	3
11 Same day admission	Day surgery beds, Diagnostic GI, Endoscopy, Ophthalmology, Dentistry, Oncology, Renal Dialysis, Hospital in the Home	22
12 Outpatient clinics	Pharmacists participating in Medical Consultation clinics (including all Tier 2 Non-admitted Service 20.1–20.51)[11] Pharmacists providing services in Allied Health and/or Clinical Nurse Specialist Interventions clinics (including Tier 2 Non-admitted Service: 40.01, 40.02, 40.07, 40.13, 40.19, 40.20, 40.21, 40.26)[11]	22

FTE = full-time equivalent.
*Includes services on weekdays and weekends.
†Figure presented on the basis of admitted patients only but allowance for workload for some patients discharged from ED (based on admission rate of 27%).[7]

3. hospital throughput, which is a combination of the number of beds, length of stay and occupancy and the usage of same-day and ambulatory services.

General guidance regarding clinical pharmacist staffing levels for particular service areas is described in Tables 9.1 and 9.2. These ratios are based on:

- providing a clinical pharmacy service to support an individual patient's MMP
- a bed occupancy rate of 95%
- an average length of stay of 5.9 days for general medical and surgical patients (the length of stay for overnight admissions in Australia's public hospitals in 2011–12)[7]
- an average length of stay of 11.9 days for palliative care patients, 18 days for rehabilitation patients and 20 days for geriatric evaluation and management[7,11,12]
- minimal dispensing or medicine distribution activities performed by the pharmacist
- a small component of clinical supervision, e.g. undergraduate and postgraduate pharmacy students
- a 5-day service with an 8-hour working day (allowance has been made for attending interdisciplinary care planning, pharmacy staff meetings/liaison with other pharmacy staff regarding prescriptions).

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

If additional activities, e.g. dispensing, ensuring compliance with PBS requirements, liaison with community care providers, provision of adherence aids, are included in a pharmacist's job description, then the number of patients/beds able to be covered by the pharmacist would need to be reduced. Resource allocation for leave cover should also be considered.

If the length of stay within a unit is less than 6 days, or patients are transferred from one unit to another during their inpatient stay, the number of patients/beds able to be covered by the pharmacist would need to be reduced.

If extended services, e.g. 7-day service, services on public holidays, are offered then additional pharmacist time is required. Assuming the majority of admissions and discharges occur during the weekdays and a focus on safety of medicines use, the additional time per day for services in Table 9.1 is 2 to 2.5 hours. This amount of time would only allow the pharmacist to undertake medication reconciliation for newly admitted patients and those discharged and undertake a brief review of admitted patients.

Service types listed in Table 9.2 require the same pharmacist resources irrespective of the day of the week.

Table 9.3 lists the competencies and accreditation frameworks that are relevant to this chapter.

References

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9. Pharmacy Board of Australia. Guidelines for dispensing of medicines. Melbourne: Australian Health Practitioner Regulation Agency; 2010.
10. Department of Health and Aged Care. National medicines policy. Canberra: The Department; 2000.
11. Independent Hospital Pricing Authority. Tier 2 outpatient clinic definitions. Version 1.2. Canberra: The Authority; 2012.
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13. Society of Hospital Pharmacists of Australia. Clinical competency assessment tool (shpaclinCAT version 2). In: SHPA standards of practice for clinical pharmacy services. J Pharm Pract Res 2013; 43 (suppl): S50-S67.
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Table 9.3 Competencies and accreditation frameworks
Relevant national competencies and accreditation standards and shpaclinCAT competencies
shpaclinCAT[13]
N/A
National competency standards framework for pharmacists[14]
Standard 3.1 Provide leadership and organisational planning 2 Establish a strategic direction 3 Plan pharmacy services 4 Define organisational structure
Standard 3.4 Manage quality service delivery 1 Facilitate service delivery 2 Maintain and enhance service quality 3 Ensure continuity of service
National safety and quality health service standards[2]
Standard 1 Governance for safety and quality in health service organisations: governance and quality improvement systems 1.1 Implement a system that determines and regularly reviews the roles, responsibilities and accountabilities and scope of practice for the clinical workforce