

Snapshot of Hospital Pharmacy Workforce in Australia

Karen M O'Leary, Yvonne M Allinson, Sue W Kirsas, John K Jackson, Naomi G Burgess

ABSTRACT

To provide a snapshot of current staff utilisation, a questionnaire was sent to 248 Australian hospitals with an identified hospital pharmacy service. The data returned from 101 hospital pharmacy services provided a snapshot of where hospital pharmacists are currently working, what they spend their time doing, and the role of pre-registration pharmacists and pharmacy support staff in providing hospital pharmacy services.

Key findings of the responses from these 101 hospital pharmacy services showed that in 2000-2001:

1. 129.16 of the 929.46 pharmacists establishment full-time equivalent positions (14%) were vacant;
2. one in three hospital pharmacists worked part time;
3. one in three hospital pharmacists had a postgraduate qualification; and
4. on average 41% of pharmacists' time was devoted to clinical services, 39% to distribution services and 16% to management activities.

The full report is available at:

<http://www.shpa.org.au/documents/snapshotworkforce.pdf>

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BACKGROUND

The Society of Hospital Pharmacists of Australia (SHPA) undertook to deliver to the National Pharmacy Workforce Reference Group a demand model and associated data for hospital pharmacists for inclusion in a project on the supply and demand of pharmacists 2000-2006 and 2006-2010. Dimaxon Pty Ltd was employed to develop this model under the advice of an SHPA Advisory Group. The data presented in this report were used to provide baseline data on current utilisation and extrapolated estimates for the future demand for hospital pharmacists.

METHODOLOGY

Hospital pharmacy services were identified in 279 of over 1000 registered hospitals in Australia; 227 in public sector hospitals and 52 in private sector hospitals. Each hospital was classified using the Australian Institute of Health and Welfare's National Hospital Peer Group (HPG) classification system (Table 1).¹

An electronic questionnaire was produced in Excel, with a corresponding hard copy version and the questionnaire was sent to 248 hospital pharmacy services. Pharmacy service contact details were not readily available for 31 hospitals and these were excluded from the study. Data from all responses received electronically were automatically downloaded into an Access database.

Table 1. National Hospital Peer Group classification

Category	Title	Description
A	Principal referral and women's and children's hospitals	A1 Metropolitan hospitals with >20 000 acute casemix-adjusted separations and rural hospitals with >16 000 acute casemix-adjusted separations per annum
		A2 Specialised acute women's and children's hospitals with >10 000 acute casemix-adjusted separations per annum
B	Major	B1 Metropolitan acute hospitals treating >10 000 acute casemix-adjusted separations per annum
		B2 Rural acute hospitals treating >8000 acute casemix-adjusted separations per annum and remote hospitals with >5000 casemix-weighted separations
C	Medium	C1 Medium group 1 hospitals treating between 5000 and 10 000 acute casemix-adjusted separations per annum
		C2 Medium group 2 hospitals treating between 2000 and 5000 acute casemix-adjusted separations per annum plus acute hospitals treating <2000 casemix-adjusted separations but with >2000 separations per annum
D	Small hospitals	Small rural acute hospitals (mainly small country town hospitals), small non-acute hospitals and small remote hospitals. Most are <2000 separations
E	Sub acute and non acute	Aged care homes, multipurpose services, hospices, rehabilitation and mothercraft
F	Psychiatric	Psychiatric

Written responses were manually entered into an Excel spreadsheet and loaded into the same Access database. Where the intention of the respondent was unclear clarification was sought. All figures were extracted from the Access database using a combination of Access and Excel software.

RESULTS

The data presented are the actual responses received from 101 hospital pharmacy services across Australia. The data have not been extrapolated therefore percentages reflect this subset, not all hospital pharmacy services.

Response Rate

101 questionnaires (41% of those surveyed and 36% of all hospital pharmacy services nationwide) were returned. The number of replies by state and HPG are shown in Table 2.

Karen M O'Leary, BPharm, Dimaxon Pty Ltd, South Melbourne, Victoria, **Yvonne M Allinson**, BPharm GradDipHospPharm, GradDipHealthAdmin, Executive Director, The Society of Hospital Pharmacists of Australia, South Melbourne, Victoria, **Sue W Kirsas**, BPharm, Pharmacy Department, Austin & Repatriation Medical Centre, Heidelberg, Victoria, SHPA Federal Councillor, **John K Jackson**, BPharm, GradDipHospPharm, Integrated Pharmacy Services, Melbourne, Victoria, **Naomi G Burgess**, BPharm, MHSM, CHP, Pharmacy Department, Royal Adelaide Hospital, Adelaide, School of Pharmaceutical, Molecular and Biomedical Sciences, University of South Australia, Adelaide, South Australia, SHPA Federal Councillor. **Address for correspondence:** Karen M O'Leary, Dimaxon Pty Ltd, PO Box 2048, South Melbourne BC, Vic 3205, E-mail: dimaxon@mail.bigpond.com

Table 2. Questionnaires received by state and by HPG

State	ACT	NSW	NT	Qld	SA	Tas.	Vic.	WA	Total
No. of hospital pharmacy services	3	98	5	49	14	6	79	25	279
Number of replies received	2 (67%)	26 (27%)	2 (40%)	21 (43%)	6 (43%)	1 (17%)	33 (42%)	10 (40%)	101 (36%)
HPG	A1	A2	B1	B2	C1	C2	D	E	F
No. of hospital pharmacy services	59	11	52	26	43	48	18	13	9
Number of replies received	32 (54%)	8 (73%)	13 (25%)	8 (31%)	15 (35%)	12 (25%)	7 (39%)	3 (23%)	3 (33%)

The response varied by region and type of hospital, from the small hospital on Thursday Island to the largest tertiary referral centre. Five services indicated they could not respond to the questionnaire:

- two public hospitals stated that a shortage of staff and therefore time, prevented a response; and
- three private hospitals expressed reservations about providing information about their service to an external body.

There was a higher response rate from services in public hospitals (38%) than private hospitals (29%). The response rate from services in metropolitan areas (defined as within a capital city) was 44% and from rural services was 29%.

The low response rate for HPG B1 was probably linked to the high number of private sector hospitals in this peer group. The low response rate from smaller hospitals was expected—the majority of hospitals who treat less than 5000 casemix-adjusted inpatients annually have an average of 1.95 full-time equivalent (FTE) pharmacists and many are sole pharmacist services.

FTE Positions

Establishment FTE positions and vacancies by state and HPG are presented in Tables 3 and 4. Fourteen per cent of establishment FTE were vacant.

Western Australia, Victoria and Queensland had the smallest percentage of vacancies. New South Wales, the

Table 3. Hospital pharmacist vacancies and percentage of part-time pharmacists by state

State	Pharmacist establishment FTE	FTE vacant n (%)	FTE filled n (%)	Number of pharmacists filling these positions	Average percentage of part-time pharmacists
ACT	10.20	2.00 (20%)	8.20 (80%)	15	53%
NSW	273.64	45.20 (17%)	228.44 (83%)	253	30%
NT	4.00	1.50 (38%)	2.50 (62%)	4	70%
Qld	170.44	18.89 (11%)	151.55 (89%)	190	37%
SA	89.55	20.95 (23%)	68.60 (77%)	85	26%
Tas.	13.50	7.00 (52%)	6.50 (48%)	7	15%
Vic.	283.48	28.27 (10%)	255.21 (90%)	322	33%
WA	84.65	5.35 (6%)	79.30 (94%)	95	22%
Total	929.46	129.16 (14%)	800.30 (86%)	971	32%

Table 4. Hospital pharmacist vacancies and percentage of part-time pharmacists by HPG

HPG	Pharmacist establishment FTE	FTE vacant n (%)	FTE filled n (%)	Number of pharmacists filling these positions	Average percentage of part-time pharmacists
A1	633.87	86.19 (14%)	547.68 (86%)	637	28%
A2	107.88	22.52 (21%)	85.36 (79%)	103	23%
B1	67.77	4.85 (7%)	62.92 (93%)	86	43%
B2	39.85	10.05 (25%)	29.80 (75%)	39	46%
C1	32.82	1.20 (4%)	31.62 (96%)	43	38%
C2	19.07	0.85 (4%)	18.22 (96%)	30	58%
D	8.60	1.80 (21%)	6.80 (79%)	9	41%
E	7.60	0.70 (9%)	6.90 (91%)	11	56%
F	12.00	1.00 (8%)	11.00 (92%)	13	38%
Total	929.46	129.16 (14%)	800.30 (86%)	971	32%

largest state with the most hospitals, had a vacancy rate of 17%.

Major rural hospitals (HPG B2) have the highest percentage of vacancies (25%). The large specialist hospitals (HPGs A1 and A2) had over 100 pharmacist vacancies (17% vacancy rate). Metropolitan hospitals had a vacancy rate of 13% while rural hospitals had a vacancy rate of 18%.

Part-Time Workforce

The number of pharmacists employed by state and HPG are presented in Tables 3 and 4. In 2000-2001, 32% of hospital pharmacists worked part-time. A higher number of pharmacists are required to fill each staffed position in rural areas where approximately 40% of hospital pharmacists work part time. It is clear that part-time pharmacists are an essential part of the hospital pharmacy workforce across all hospitals, irrespective of size, location or whether the hospital is public or private. A high number of part-time workers limit the number of FTE that can be 'covered' by the number of pharmacists available. This survey suggests that in the hospital sector currently one in three pharmacists works part time, that is 1.2 pharmacists are required to cover every 1.0 FTE.

Postgraduate Qualifications

It has been postulated that one of the reasons for the shortage of hospital pharmacists is the poor financial return for the level of qualifications obtained by many pharmacists. The number of pharmacists with postgraduate qualifications by state and HPG are presented in Table 5. In the hospitals surveyed 33% of all pharmacists have postgraduate qualifications.

When investigated by HPG the spread of postgraduate qualifications was fairly even. This implies that

either postgraduate studies in clinical services or management of resources is expected by employers in all states and all hospital types, or that hospital pharmacists perceive the need for these studies for their own professional development.

Pre-Registration Pharmacists

A major strategy to encourage pharmacists to work in the hospital sector is the provision of pre-registration training. This strategy has its roots in the mission statement of many public hospitals as teaching, training and research institutions. Funding for pre-registration places varies across states and the public and private sectors.

The number of pre-registration positions by state and HPG are presented in Table 6. Some states, such as Victoria, have a strong tradition of hospital-based training and have maintained discrete funding directly from the state government for this purpose. The number of preregistration positions is highest in Victoria. When identified by HPG, 80% of pre-registration positions were available in specialist and principal referral hospitals in metropolitan and rural areas (HPGs A1 and A2).

FTE and 'Activity Streams'

The services delivered by hospital pharmacy departments are defined in the document *Definitions for Hospital Pharmacy Services*.² This document describes eight chapters of activities ranging from services for individual patients to drug budget management. For simplicity, these services were considered in three 'activity streams' (Table 7).

No hospital pharmacy service can effectively deliver services without an appropriate balance between these three activity streams. Clinical services are required to ensure what is delivered through distribution services is

Table 5. Pharmacists with postgraduate qualifications by state and by HPG

State	ACT	NSW	NT	Qld	SA	Tas.	Vic.	WA	Total
Hospital pharmacists	15	253	4	190	85	7	322	95	971
Hospital pharmacists with postgraduate qualifications	4 (27%)	64 (25%)	1 (25%)	62 (33%)	23 (27%)	1 (14%)	108 (34%)	53 (56%)	316 (33%)
HPG	A1	A2	B1	B2	C1	C2	D	E	F
Hospital pharmacists	637	103	86	39	43	30	9	11	13
Hospital pharmacists with postgraduate qualifications	209 (33%)	32 (31%)	23 (27%)	12 (31%)	15 (35%)	13 (43%)	3 (33%)	3 (27%)	6 (46%)

Table 6. Number of pre-registration FTE by state and by HPG

State	ACT	NSW	NT	Qld	SA	Tas.	Vic.	WA	Total
Pharmacist establishment FTE	10.20	273.64	4.00	170.44	89.55	13.50	283.48	84.65	929.46
Pre-registration FTE	1.00	17.00	0	14.00	10.00	1.00	43.00	5.50	91.50
HPG	A1	A2	B1	B2	C1	C2	D	E	F
Pharmacist establishment FTE	633.87	107.88	67.77	39.85	32.82	19.07	8.60	7.60	12.00
Pre-registration FTE	65.00	8.00	7.00	5.50	4.00	1.00	0	0	1.00

Table 7. Summary of activity streams

Management, policy and procedures	Drug distribution services	Clinical services
<ul style="list-style-type: none"> • Institutional drug policy management • Clinical trials • Research • Quality activities • Human resource management, training • Budget management • Information management 	<ul style="list-style-type: none"> • Acquisition and materials management • Sterile and non-sterile production • Quality control • Imprest systems • Dispensing • Clinical trials • Delivery 	<ul style="list-style-type: none"> • Drug therapy monitoring • Patient profiling • Patient counselling • Therapeutic information • Drug information • Training and education

Table 8. Activity streams by state

Activity stream	ACT	NSW	NT	Qld	SA	Tas.	Vic.	WA	Total
Distribution	60%	39%	98%	43%	51%	56%	33%	41%	39%
Clinical services	26%	39%	1.5%	40%	30%	31%	50%	41%	41%
Management services	14%	18%	0.5%	14%	14%	13%	16%	17%	16%

The percentages for the three activity streams do not add up to 100%. Some FTE is devoted to ‘permanent’ cover for annual leave and long service leave and a few respondents could not allocate all of their FTE to the activities listed.

appropriate. Distribution services are required to ensure that clinical intent is delivered and management, policy and procedures are required to support all activities.

The results for each state are presented in Table 8. Data from the hospital pharmacy services surveyed indicates that on average:

- 41% of pharmacists’ time is spent providing clinical services to individual patients, drug information services and training and education;
- 39% of pharmacists’ time is spent on the acquisition, manufacture and dispensing of medications; and
- 16% of pharmacists’ time is spent managing the drug and personnel resources of the service and hospital wide activities such as institutional drug policy management.

These ratios vary between individual hospitals, across HPGs, between the public and private sector and across locations. However, the percentage of time devoted to management, policy and procedures is almost constant between states and HPGs. Many hospital pharmacists are involved in this group of activities as it includes the management of clinical trials, quality activities and drug utilisation reviews as well as more general management activities. It seems no matter the size or location of the hospital approximately 16% of FTE is required to manage the resources pharmacy services deliver and are responsible for.

This figure may appear high, but on average pharmacy services account for 5% of the total hospital budget. It has been estimated that the budget for pharmaceuticals in Australian hospitals is \$1 billion annually (the budget for PBS pharmaceuticals is around \$4 billion annually).³ In this context, the pharmacist FTE devoted to manage all facets of the delivery of these resources is relatively small.

Although there is variety across states the pattern between the three activity streams is similar for the five largest states. The exceptions are the relatively high percentage of FTE for clinical services in Victoria and the relatively low percentage for South Australia.

The FTE for distribution services (36%) is lower than average in HPG A1 hospitals. This coincides with a relatively high number of support staff who provide distribution services—for every pharmacist FTE providing distribution services in these hospitals there are 2.12 support staff.

The breakdown of activities of support staff was interesting. The vast majority of FTE perform distribution activities (85%); however, 9% perform management, policy and procedure activities.

The average number of support staff for each hospital category varies significantly. HPG A1 hospitals have an average of 13 support staff FTE. Hospitals with less than 5000 casemix-adjusted inpatients have an average ≤ 1 FTE. These figures are probably linked to the volume of patients treated at these hospitals and the corresponding workload associated with the acquisition, warehousing, manufacturing and distribution of pharmaceuticals.

DISCUSSION

Several states have responded to the perceived shortage of hospital pharmacists with an audit of establishment and vacant FTE.^{4,5} To our knowledge this is the first snapshot of pharmacy services across Australia. Variation between pharmacy services was expected; however, these data show that most hospital pharmacy services have similar service profiles and similar problems with the high number of vacant pharmacist positions and the number of people required to fill each FTE.

This study was limited by the lack of an accepted nomenclature to describe service delivery models in Australian hospitals and by a poor response rate from some states.

We recommend that SHPA develop a framework to describe the numerous service delivery models being employed in hospital pharmacy services and that SHPA undertake an annual survey of all hospital pharmacy services in the first or second quarter of each financial year. This would provide valuable information on changes in the practice of hospital pharmacy on a year-by-year basis.

SUMMARY

This study provided a snapshot of where hospital pharmacists work, what they spend their time doing and the role of pre-registration pharmacists and pharmacy support staff in hospital pharmacy services. These baseline data on pharmacist and support staff utilisation will be used to estimate future demand for hospital pharmacists.

Acknowledgment

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