

Pharmacy Staffing and Drug Costs for Specific Clinical Programs and Pharmacy Services – Acute Care Hospitals

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Hospital pharmacy departments provide pharmaceutical services to a wide range of inpatient and outpatient programs. Typical inpatient clinical programs that receive substantial pharmacy support include critical care, medicine, surgery, mental health and oncology. Many hospital pharmacies also provide support for a variety of outpatient programs and some pharmacies are also responsible for regional or provincial services such as drug information, home IV admixture and home TPN. The diversity of programs and services provided by hospital pharmacies can complicate benchmarking comparisons based on overall departmental staffing and drug costs. This can be particularly difficult if there are no data available to assist managers in carrying out a more detailed analysis and comparison of their own department to others in their peer group. In previous Hospital Pharmacy in Canada Annual Reports, the results of our efforts to identify the pharmacy staffing and drug costs incurred by hospitals in the delivery of pharmacy services to specific clinical programs and in the delivery of a number of specific pharmacy services have been described. The objectives of this exercise are two-fold:

- i) to create more detailed benchmark data for those who are called upon to compare and justify their own pharmacy staffing and drug costs against those reported by other hospitals
- ii) to facilitate planning for new and expanded programs and services, by providing information on the pharmacy resources typically required to operate particular programs and services

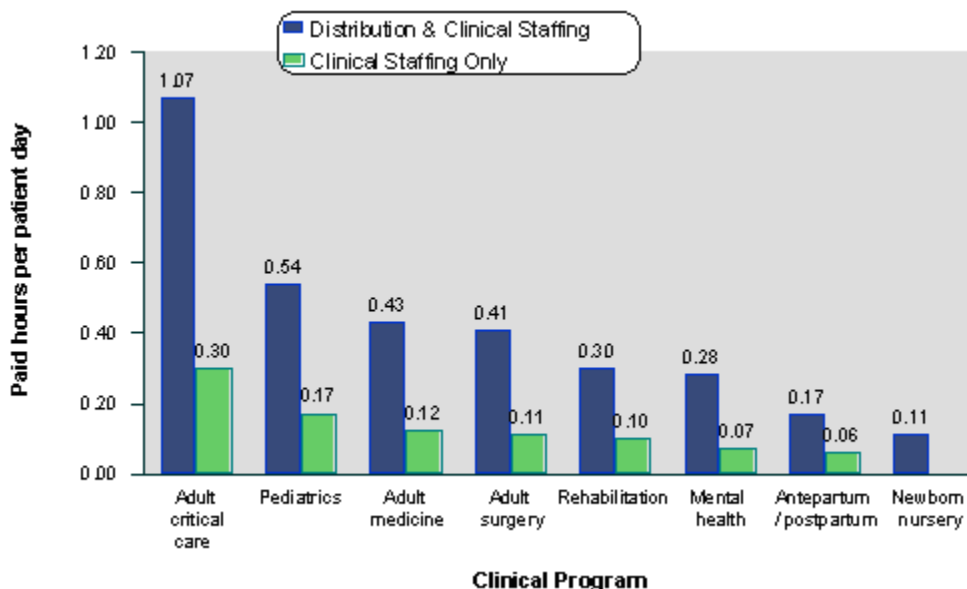
For this year's survey, an expanded programmatic benchmarking survey was developed in an effort to provide data on a broader range of clinical programs and pharmacy services. The new survey tool was distributed by e-mail to 86 hospitals with more than 200 inpatient beds. Responses were received from 34 hospitals, representing a 40% response rate. Three of these responses were eliminated from the analysis because insufficient data were submitted to enable the calculation of staffing or drug cost indicators (two hospitals), or because the facility fell below the 200 bed cutoff (one hospital). The response rate, although somewhat low, was in line with expectations. The experience gained in previous surveys has indicated that the work required to complete this part of the survey is problematic for many hospitals, since their financial reporting systems may not be designed to easily capture costs at the level of detail required to complete this part of the survey.

Staffing Indicators for Specific Inpatient Clinical Programs

Figure J-1 summarizes the pharmacy staffing data (paid hours per patient day for pharmacists and/or technicians) for those inpatient clinical programs where program-specific staffing information was reported by at least five hospitals. For most clinical programs, with the exception of rehabilitation (n=9) and newborn nursery (n=5), program-specific data was provided by more than 10 hospitals. Some sites were able to provide total, program-specific, pharmacy staffing (i.e. for both drug distribution and clinical services) while other sites were able to provide staffing data only for the clinical services that were provided to specific programs. It is probable that the latter sites were unable to allocate their centralized staffing for drug distribution services to clinical programs, but were able to identify the decentralized staffing that was allocated to each clinical program. The data can be summarized as follows:

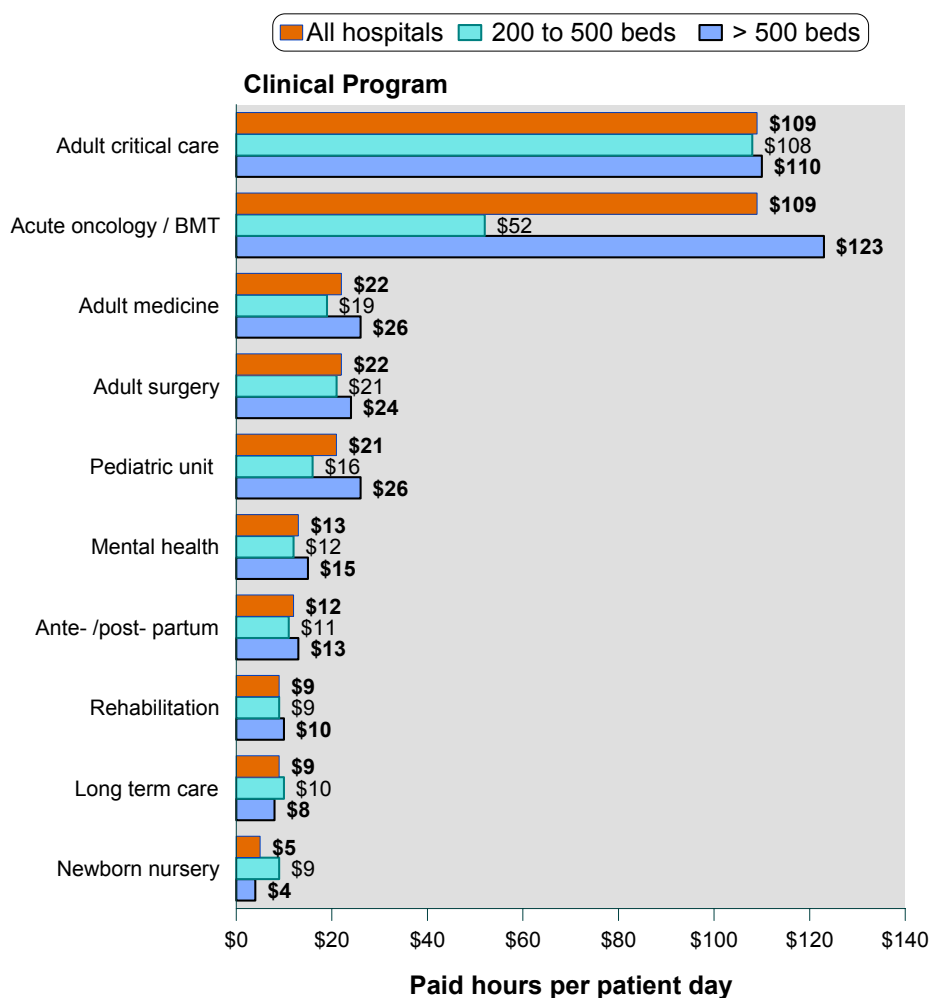
- As might be expected, high acuity/high complexity clinical programs, such as critical care, reported larger amounts of pharmacy staffing, on a paid hour per patient day basis, than did low acuity/low complexity programs. This finding was similar for both those hospitals that could report combined clinical/distributive staffing and for those hospitals that could only report clinical staffing data. This suggests that these high acuity patient groups have needs that create pharmacy workload increases of both a distributive and clinical nature. The figures for combined drug distribution and clinical staffing ranged from 0.11 paid hours per patient day for services to the newborn nursery, to 1.07 paid hours per patient day for adult critical care. The figures for clinical staffing ranged from 0.06 paid hours per patient day for antepartum/postpartum to 0.30 paid hours per patient day for adult critical care.

Figure J-1. Average of Reported Pharmacy Staffing (Paid Hours Per Patient Day) by Clinical Program 2003/04



- There was little difference between the staffing resources reported by hospitals with 200 to 500 beds versus hospitals with more than 500 beds. The one exception where a major difference did appear to exist was adult critical care (0.76 versus 1.26 paid hours per patient day for combined distributive/clinical staffing in the smaller versus the larger hospitals). However the number of facilities that were able to report combined distributive/clinical staffing for critical care was not large (five hospitals in the 200 to 500 bed group and eight facilities in the >500 bed group). In addition, several facilities in the >500 bed group had comprehensive satellite pharmacy operations in their critical care areas, which raises the average staffing value for the larger hospitals.
- Comparison of the reported staffing for those hospitals that provided data for both distribution and clinical staffing versus those that could only provide staffing information for clinical services reveals that the paid hours per patient day for clinical services are between 25% and 30% of the paid hours per patient day required for both distributive and clinical services. This suggests that 70% to 75% of the total paid hours for pharmacists and technicians are utilized to provide drug distribution services.

Figure J-2 Average of Reported Drug Costs Per Patient Day by Clinical Program 2003/04



In Figure J –2, drug cost data are provided for specific inpatient clinical programs. More hospitals were able to provide program-specific drug cost data than were able to provide program-specific staffing data. As a result, drug cost data is provided for two programs, acute oncology/BMT and long term care, that do not appear in the staffing comparison provided in Figure J-1.

For most inpatient clinical programs, the average drug cost figures are based on data provided by more than 10 hospitals. The exceptions are long term care (seven hospitals), acute oncology/bone marrow transplant (five hospitals), and newborn nursery (four hospitals). Points to note about this data are as follows:

- With the exception of long term care and newborn nursery, drug costs reported for each clinical program were higher in hospitals with more than 500 beds, as compared to hospitals in the 200 to 500 bed range. The drug cost data for long term care and newborn nursery are based on small numbers of reporting hospitals. Although the results are presented in this figure for completeness sake, the comparison between smaller and larger hospitals for those two programs must be interpreted with that limitation in mind.

- The figures for acute oncology/BMT should also be interpreted cautiously, because the overall number of reporting hospitals is small (five hospitals in total) and there was only one hospital in the 200 to 500 bed group that reported data for this clinical program. The acute oncology/BMT program in that particular facility may or may not be similar to those in the larger hospitals.

Staffing Indicators for Other Programs and Services

In Table J-1, staffing indicators are provided for a number of programs and services where the workload denominator is something other than patient days (e.g. Operating Room (OR) cases, concurrent studies managed, admixtures prepared, etc.). The workload denominators reported here for these programs and services may require some thought and discussion by pharmacy managers and others who use this data. The denominators that appear in Table J-1 were chosen because they intuitively seem to have a relationship to the staffing input, and because most facilities would be able to measure and track the required information.

Table J-1 Pharmacy Staffing Indicators for Other Programs and Services

Program or Service	All hospitals	200 to 500 beds	>500 beds
Operating Room			
Distributive and clinical - paid hour per case (number of reporting hospitals)	0.08 (n=7)	0.11 (n=3)	0.06 (n=4)
Investigational Drug Studies			
Average paid hours per concurrent study managed (number of reporting hospitals)	43.8 (n=8)	22.1 (n=3)	56.8 (n=5)
Drug Procurement/Inventory Control			
Average paid hours per \$1 million of drug purchases (number of reporting hospitals)	480 (n=16)	509 (n=10)	432 (n=6)
Drug Use Evaluation			
Average paid hours per \$1 million of drug purchases (number of reporting hospitals)	144 (n=7)	115 (n=3)	165 (n=4)
Centralized Oncology Admixture			
Average paid hours per admixture (number of reporting hospitals)	0.65 (n=9)	0.66 (n=4)	0.64 (n=5)
Centralized IV admixture			
Average paid hours per admixture (number of reporting hospitals)	0.15 (n=9)	0.17 (n=4)	0.13 (n=5)

- A total of seven sites provided data on combined drug distribution and clinical services staffing to their operating rooms, as well as the OR cases managed in 2003/04 at their sites. This allowed for the calculation of the paid pharmacy hours per OR case. There was considerable variability (0.02 to 0.14 paid hours per OR case) around the average of 0.08 hours per case, suggesting that either the workload denominator (OR cases) may not be reliable, or that there was considerable variability in the distributive/clinical services being provided to the OR at different hospitals, or both of these.
- A total of eight hospitals were able to provide staffing information for the management of investigational drug studies, as well as the average number of concurrent studies that were managed by their staff during 2003/04. This allowed for the calculation of a “paid hours per concurrent study” workload indicator, which averaged 43.8 hours overall for these eight hospitals. The smaller hospitals with 200 to 500 beds, that reported an average value of 22.1 paid pharmacy hours per concurrent study managed, tended to have been responsible for only a small number of studies. In contrast, the hospitals with more than 500 beds reported an average value of 56.8 paid hours per study and were usually managing large numbers of studies. These differences may reflect a difference in the types and complexity of studies being managed. The hospitals with more than 500 beds and large numbers of studies were likely to be university-affiliated, tertiary care hospitals. Studies conducted in that environment are probably more complex and more demanding in terms of the pharmacy input required for their management.

- A total of 16 hospitals provided data on the staffing used to perform drug procurement and inventory control functions, as well as the total value of their drug purchases in 2003/04. This allowed for the calculation of a “paid hours per \$1 million of drug purchases” indicator, which averaged 480 paid hours per \$1 million of drug purchases. Although the validity of the workload denominator (i.e. millions of dollars of drug purchases) could be challenged, the variation around the average value was relatively small, suggesting that this may be a useful staffing indicator.
- Somewhat surprisingly, only seven hospitals provided information on dedicated staffing for drug use evaluation. Total drug purchases were again used as the workload denominator. The average value of 144 paid hours per \$1 million of drug purchases is less than one-third of the 480 paid hours per \$1 million of drug purchases that was reported for drug procurement and inventory control. The small number of hospitals who reported that they had dedicated staffing for drug use evaluation, and the small amount of hours committed to this function, might suggest that there is a low priority given to drug use evaluation in our hospital systems. Alternatively, these results may suggest that pharmacy departments have chosen to integrate the drug use evaluation and drug use management functions into their overall clinical pharmacy services, rather than establish a separate drug use evaluation service.
- A total of nine hospitals provided information that allowed for the calculation of a staffing indicator for their oncology IV admixture service, and nine hospitals provided the information required to calculate the same indicator for other IV admixtures. The average value of 0.65 paid hours per admixture was approximately four times the value of 0.15 paid hours per admixture for other drugs. This is not surprising, given the patient-specific nature of antineoplastic therapies and the extra precautions that must be taken in preparing these admixtures.

Pharmacy Staffing for Programs and Services Lacking a Useful Workload Denominator

The survey respondents provided staffing information for a number of other clinical programs and services for which a useful workload indicator is not available. In some cases information on a possible workload indicator (e.g. drug information requests, outpatient prescriptions, number of unit doses packaged, etc.) was requested in the survey but its use did not turn out to be feasible. In some cases an insufficient number of respondents were able to provide the requested information. In other cases, information was provided, but upon examination it was evident that different facilities were capturing different types of data. For example, most sites could not provide the number of unit dose items that were packaged; among those that did provide numbers it appeared that some had reported the actual number of doses packaged while others had reported the line items or batches packaged.

Table J-2 Pharmacy Staffing (without a workload denominator) for Other Programs and Services

Program or Service	All Hospitals	200 to 500 beds	>500 beds
Emergency Room Range of paid hours per year (number of reporting hospitals)	106 to 37,270 (n=19)	106 to 3315 (n=9)	195 to 37,270 (n=10)
Outpatient Clinics Range of paid hours per year (number of reporting hospitals)	394 to 12,204 (n=14)	394 to 5089 (n=6)	516 to 12,204 (n=8)
Ambulatory Dispensing Range of paid hours per year (number of reporting hospitals)	119 to 19,498 (n=8)	390 to 17,550 (n=4)	119 to 19,498 (n=4)
Dialysis Services Range of paid hours per year (number of reporting hospitals)	772 to 7995 (n=10)	772 to 7995 (n=5)	1990 to 6852 (n=5)
Drug Information Services Range of paid hours per year (number of reporting hospitals)	780 to 8125 (n=15)	780 to 2048 (n=5)	975 to 8125 (n=10)
Centralized unit dose packaging Range of paid hours per year (number of reporting hospitals)	1602 to 4485 (n=11)	2340 to 4485 (n=3)	1602 to 4370 (n=8)
Hospital funded research Range of paid hours per year (number of reporting hospitals)	487 to 2633 (n=6)	487 to 1463 (n=2)	770 to 2633 (n=4)
Externally funded research Range of paid hours per year (number of reporting hospitals)	585 to 1602 (n=3)	-	585 to 1602 (n=3)
Hospital funded teaching Range of paid hours per year (number of reporting hospitals)	195 to 3270 (n=7)	487 to 975 (n=2)	195 to 3270 (n=5)
Externally funded teaching Range of paid hours per year (number of reporting hospitals)	1560 to 7540 (n=4)	-	1560 to 7540 (n=4)

Although the data in Table J-2 are of somewhat limited value, it was felt that this information might still be useful to pharmacy managers. In the table, the range of the reported total number of pharmacy staffing hours dedicated to a program or service is presented, as well as the number of respondents who provided staffing information for that program or service. How might this information be useful, given the lack of a workload indicator? Pharmacy managers and others might be interested in knowing how many of the 31 hospitals in this survey reported that they had pharmacy staffing hours committed to programs and services such as dialysis, the emergency department, outpatient clinics, etc. They might also be interested in the range of total pharmacy hours that were reported to be dedicated to these various programs and services.

During the compilation of this table, several observations were made that may be useful to pharmacy managers.

- A number of hospitals in Quebec reported that they had a large number of staffing hours committed to the provision of services to their Emergency Departments and to Outpatient Clinics. The allocation of resources to these clinical areas in Quebec seems to far exceed the commitment of resources to these programs in other parts of Canada.
- The number of hospitals that continue to operate an ambulatory care dispensary appears to be quite small. Although eight hospitals reported staffing hours for ambulatory dispensing, four of these hospitals reported a very minimal commitment of several hundred hours during 2003/04. Two of the remaining hospitals reported annual hours equivalent to eight to 10 FTEs, whereas the remaining two sites reported annual hours equivalent to approximately two FTEs.
- A total of 10 hospitals reported that they had pharmacy resources committed to servicing dialysis patients and the pharmacy staffing commitment to this program was usually quite substantial. It appears that pharmacy departments are giving a fairly high priority to providing services to dialysis programs.
- A relatively small number of hospitals reported that they had either externally-funded or hospital-funded positions for research or teaching activities within their department. In those hospitals that did report that they had staffing committed to these activities, the staffing commitment was usually quite small. Many of the hospitals who responded to this survey are university affiliated organizations with a mandate to carry out teaching and research activities, as well as the delivery of patient care. It appears that pharmacy departments have not been well resourced to carry out their teaching and research responsibilities.

It is hoped that the data contained in this section of the survey will prove useful to pharmacy managers and others who are interested in benchmarking pharmacy resource utilization and/or using this data for the planning of new and expanded pharmacy programs.