

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

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In the last three Hospital Pharmacy in Canada Surveys, we have reported the results of our efforts to identify the pharmacy staffing and drug costs incurred by hospitals:

- × in the delivery of drug distribution and clinical pharmacy services to specific patient care programs (e.g. medicine, surgery, oncology, mental health, etc.)
- × in the provision of certain other pharmacy services (e.g. IV admixture services, TPN admixture, investigational drug services, etc.), that are usually difficult to charge/allocate to specific patient care programs

The objectives of this exercise were 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

In past years, the benchmark survey was quite demanding to complete, since it requested a detailed departmental breakdown of all pharmacy staffing and drug costs. As a result, it was distributed to a subset of larger hospitals that were felt to be more likely to have that type of detailed data breakdown for their department. However, the response rate was low, even for those larger hospitals. Many of those asked to complete the benchmarking survey commented that their financial reporting systems were not designed to easily capture drug costs and/or labour inputs at the level of detail required to fully complete this part of the survey.

For this year's survey the benchmarking section was simplified and rolled into the main survey. All respondents were encouraged to provide any program specific data that they could, even if they weren't able to complete all sections of the benchmark survey. For example, many respondents were able to provide a breakdown of drug costs by clinical program, but were not able to supply data on the staffing breakdown by clinical program. Similarly, many facilities were able to identify the clinical staff time provided to specific programs, but were not able to provide data on the breakdown of their drug distribution staffing for individual clinical programs. This year's survey methodology resulted in a much larger number of responses for most of the individual indicators, but readers should understand that the respondents are drawn from a much larger and less uniform pool of facilities than was the case with past benchmarking surveys. However the results of this year's benchmarking survey, with a much larger number of respondents, are remarkably consistent with the benchmarking data from earlier survey reports. This lends considerable credibility to the reliability of the data.

Staffing Indicators for Specific Inpatient Clinical Programs

In Table K-1, data on staffing and drug costs for 8 inpatient clinical programs, typically found in many Canadian hospitals, are presented. Again, readers are reminded that the respondents in each cell may be different from those in other cells. As a result, there are some minor anomalies in the data. For example if the paid hours per patient day for clinical services and the paid hours per patient day for drug distribution services (for any given clinical program in the table) are added up, the result may not be exactly the same as the total paid hours per patient day, reported for that program. That is because the respondents who provided data for each of those three indicators may be different.

The data can be summarized as follows:

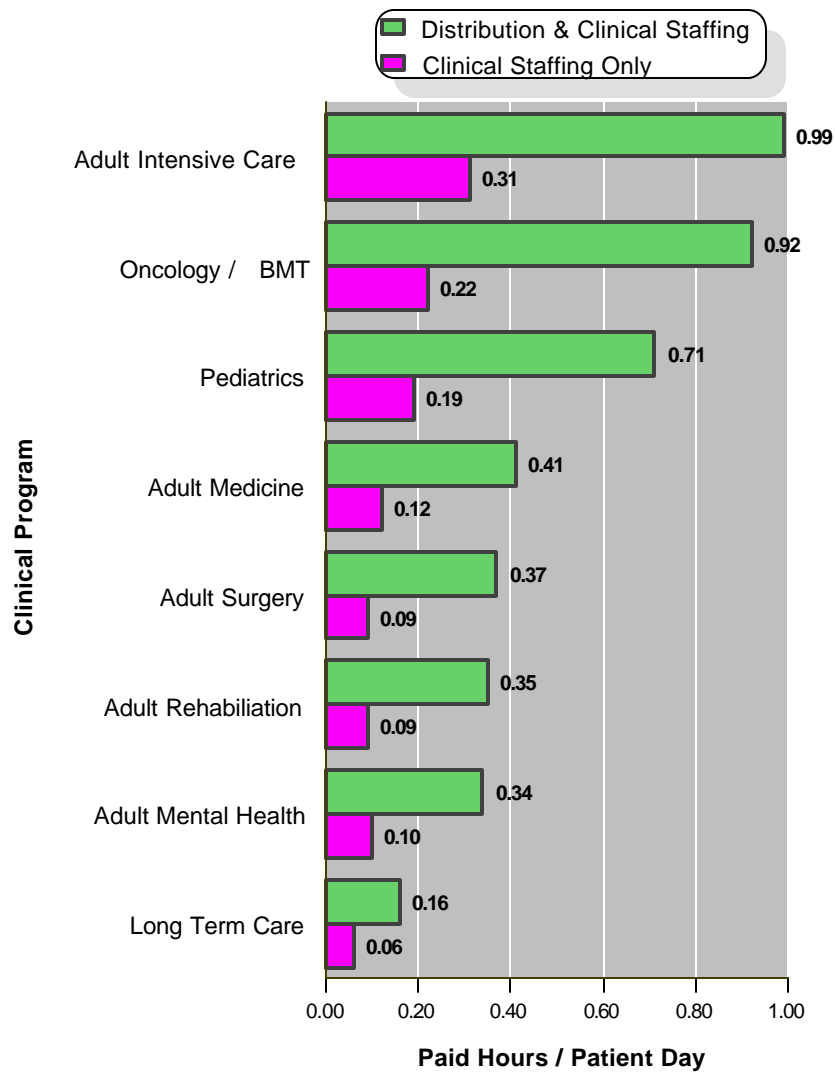
- High acuity/high complexity clinical programs, such as critical care and oncology/bone marrow transplant, consumed significantly larger amounts of pharmacy staffing, on a paid hour per patient day basis, than did low acuity/low complexity programs. This was true for both the clinical and distributive staffing indicators. Pediatrics programs also consume relatively higher resources compared to low acuity/low complexity programs within a common general hospital setting.
- When the staffing figures were looked at for teaching versus non-teaching hospitals, there are some interesting findings. For the high-acuity services (intensive care, oncology/BMT, and pediatrics) the staffing resources utilized by non-teaching hospitals are as high, or higher, than those reported by teaching hospitals. For the lower acuity programs (medicine, surgery, mental health, rehabilitation and long-term care), the staffing resources utilized by the teaching hospitals appeared to be slightly higher than those utilized by non-teaching hospitals for some programs (e.g. medicine, surgery, mental health, long term care) or similar to those utilized by other programs (e.g. rehabilitation, pediatrics). Given the small number of respondents in some of the cells, this data needs to be interpreted cautiously. However, it does suggest that the differences in overall staffing for teaching versus non-teaching hospitals, as reported in the Human Resources chapter of this survey, may be related primarily to the concentration of high-acuity clinical programs in many teaching hospitals, since on a program by program basis it does not appear that the pharmacy resources used by teaching hospitals are necessarily higher than those used by non-teaching hospitals.

Table K-1 Pharmacy Benchmarking Data For Selected Clinical Programs 2005/06

	Intensive Care	Oncology/ Bone Marrow Transplant	Medicine	Surgery	Mental Health	Rehab	Long Term Care	Pediatrics (in a general hospital)
Mean Indicator Values- All Hospitals								
Total Paid Hours per Patient Day	0.99 (n=26)	0.92 (n=11)	0.41 (n=23)	0.37 (n=19)	0.34 (n=20)	0.35 (n=13)	0.16 (n=15)	0.71 (n=10)
Drug Distribution Paid Hours Per Patient Day	0.68 (n=29)	0.69 (n=11)	0.29 (n=24)	0.37 (n=19)	0.23 (n=24)	0.25 (n=15)	0.11 (n=16)	0.47 (n=14)
Clinical Services Paid Hours Per Patient Day	0.31 (n=53)	0.22 (n=20)	0.12 (n=49)	0.09 (n=40)	0.10 (n=37)	0.09 (n=28)	0.06 (n=31)	0.19 (n=22)
Drug Costs Per Patient Day	\$113.64 (n=62)	\$133.15 (n=20)	\$20.83 (n=55)	\$22.69 (n=45)	\$11.27 (n=56)	\$9.60 (n=34)	\$8.15 (n=39)	\$16.83 (n=36)
Mean Indicator Values- Teaching versus Non-Teaching Hospitals								
Total Paid Hours Per Patient Day – Teaching	0.99 (n=9)	1.17 (n=4)	0.46 (n=7)	0.43 (n=6)	0.42 (n=7)	0.36 (n=2)	0.35 (n=2)	0.64 (n=2)
Total Paid Hours Per Patient Day – Non-Teaching	0.99 (n=17)	0.77 (n=7)	0.39 (n=16)	0.36 (n=13)	0.29 (n=13)	0.35 (n=11)	0.13 (n=13)	0.71 (n=8)
Drug Costs Per Patient Day – Teaching	\$153.90 (n=17)	\$99.47 (n=8)	\$27.74 (n=14)	\$21.07 (n=9)	\$13.12 (n=14)	\$10.92 (n=4)	\$9.23 (n=7)	\$21.36 (n=3)
Drug Costs Per Patient Day – Non-Teaching	\$98.43 (n=45)	\$155.60 (n=12)	\$18.46 (n=41)	\$23.10 (n=36)	\$10.65 (n=42)	\$9.43 (n=30)	\$7.92 (n=32)	\$16.42 (n=33)

- Comparison of the staffing for distribution and clinical services reveals a trend that is very similar to that reported in the 2003/04 survey. (Figure K-1). 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, suggesting that 70% to 75% of the total paid hours for pharmacists and technicians are utilized to provide drug distribution services.

Figure K-1 Mean Pharmacy Staffing

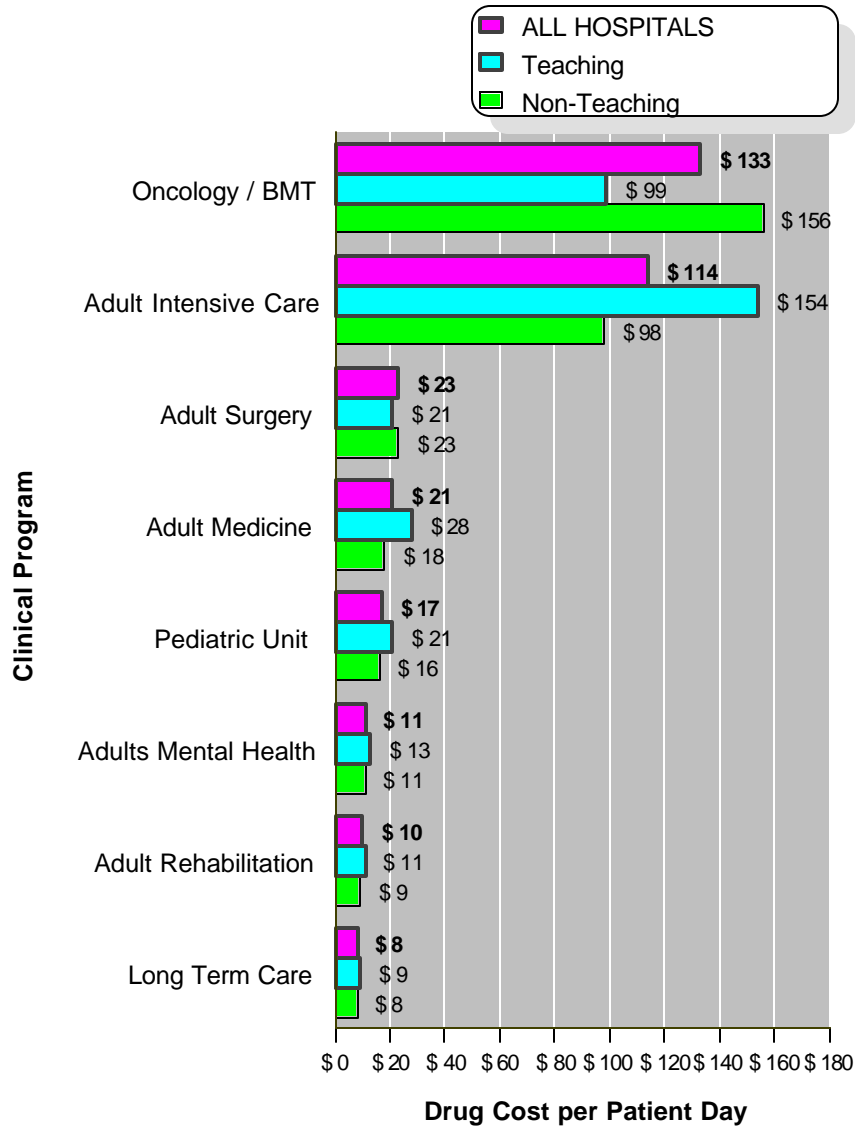


Drug Costs for Specific Inpatient Clinical Programs

In Table K-1, and in Figure K-2, mean drug cost data are provided for specific inpatient clinical programs.

- Like the staffing data provided above, the drug cost data are very consistent with the data provided in the benchmarking chapter of the 2003/04 survey report. Given the larger number of respondents, from the broader range of hospitals that provided drug cost data in the 2005/06 survey, the mean drug cost data by clinical program appear to be quite reliable.
- With the exception of oncology/BMT and surgery, drug costs for each clinical program are higher in teaching hospitals than in non-teaching hospitals. This may reflect greater use of new, more expensive drugs in the teaching hospital environment. The much higher oncology/BMT drug costs for non-teaching hospitals is an interesting finding that may warrant further investigation, but the results must be interpreted cautiously given the relatively small number of respondents who provided data for oncology/BMT drug costs.

Figure K-2 Mean Drug Costs



Staffing and Drug Cost Indicators for Other Programs and Services

In Table K-2, mean staffing indicators are provided for a number of programs and services where the workload denominator is something other than patient days (e.g. OR cases, concurrent studies managed, admixtures prepared, etc.). The denominator that appears in Table K-2 was chosen because it intuitively seems to have a relationship to the staffing input, and because many facilities would be able to measure and track it.

The methodology used in the 2005/06 survey resulted in greater numbers of respondents, allowing us to report indicators for a number of services where there were insufficient numbers of respondents in past surveys to do so (e.g. home IV admixture service, TPN service, renal dialysis service).

Table K-2 Mean Pharmacy Staffing and Drug Cost Indicators for Other Programs and Services 2005/06

Program or Service	All hospitals	Teaching Status	
		Teaching	Non-Teaching
Oncology Admixture			
Total paid hours per admixture	0.85 (n=22)	0.80 (n=4)	0.86 (n=18)
Clinical paid hours per admixture	0.21 (n=31)	0.20 (n=6)	0.21 (n=25)
Drug costs per admixture	\$219.74 (n=29)	\$109.16 (n=6)	\$248.58 (n=23)
Centralized IV admixture			
Total paid hours per admixture	0.13 (n=7)	0.09 (n=3)	0.15 (n=4)
Drug cost per admixture	\$4.42 (n=4)		
Home IV admixture			
Total paid hours per admixture	1.64 (n=10)	0.67 (n=3)	2.06 (n=7)
Clinical paid hours per admixture	0.95 (n=11)	0.19 (n=3)	1.23 (n=8)
Drug distribution paid hours per admixture	0.80 (n=12)	0.88 (n=4)	0.76 (n=8)
Drug cost per admixture	\$33.39 (n=17)	\$31.17 (n=5)	\$34.32 (n=12)
TPN Admixture			
Total paid hours per admixture	1.0 (n=23)	0.86 (n=11)	1.13 (n=12)
Clinical paid hours per admixture	0.19 (n=28)	0.18 (n=12)	0.20 (n=16)
Drug distribution paid hours per admixture	0.83 (n=29)	0.69 (n=13)	0.94 (n=16)
Drug cost per admixture	\$39.46 (n=37)	\$37.47 (n=13)	\$40.54 (n=24)
Investigational Drug Studies			
Total paid hours per concurrent study managed	56.3 (n=9)	61.5 (n=5)	49.79 (n=4)
Renal Dialysis			
Total paid hours per patient year	26.3 (n=8)	13.8 (n=2)	30.4 (n=6)
Clinical paid hours per patient year	18.8 (n=22)	7.2 (n=6)	23.1 (n=16)
Drug distribution paid hours per patient year	13.7 (n=8)	3.9 (n=2)	17.0 (n=6)
Drug cost per patient year	\$6,454 (n=22)	\$8,771 (n=6)	\$5,585 (n=16)
Emergency Room			
Drug cost per visit	\$7.43 (n=10)		\$7.43 (n=10)
Operating Room			
Drug cost per case	\$35.65 (n=35)	\$47.53 (n=10)	\$30.90 (n=25)

- The total paid hours per oncology admixture was 0.85 hours in the 2005/06 survey, compared to 0.65 hours per admixture in the 2003/04 survey. The number of respondents was substantially higher in the present survey (n=22), compared to the 2003/04 survey (n=9), so it is difficult to assess if there has been a real change in the resource requirements for this service. However, the results from both surveys indicate that the manpower requirements for oncology admixture services are substantial.
- The drug cost per oncology admixture was substantially higher in non-teaching hospitals (\$249) than in teaching hospitals (\$109). This difference in drug costs was also seen in inpatient oncology services for teaching and non-teaching hospitals, but the reasons for this difference are unclear. Again, the number of respondents is not large, but the difference is notable.
- Although the number of respondents is quite small, the mean paid hours per admixture for centralized IV (non-oncology) admixtures in this survey (0.13 hours) was similar to the result of 0.15 hours reported in the 2003/04 survey.
- The results for home IV admixture services must be interpreted in light of the relatively small number of respondents in each sub-group. The results suggest that a mean of 1.64 paid hours per admixture are utilized in the provision of this service, but there is quite a striking difference between teaching hospitals (0.67 hours per admixture) and non-teaching hospitals (2.06 hours per admixture). The difference seems to be caused by a much greater clinical time commitment for home IV admixture services in non-teaching hospitals (1.23 hours per admixture) versus teaching hospitals (0.19 hours per admixture). A possible explanation for this difference may be that teaching hospitals tend to have multidisciplinary teams involved in this service, often with an infectious disease physician and home care nurses, whereas non-teaching hospitals may rely more heavily on pharmacy to manage these patients.
- The data for total parenteral nutrition (TPN) services represents both inpatient and home TPN services. The results show that TPN production is also quite labor intensive, with a mean of 1.0 paid hours per TPN admixture reported by the responding hospitals. The staffing resource requirements were lower per admixture in teaching hospitals (0.86 hours per admixture) than in non-teaching hospitals (1.13 hours per admixture).
- The paid hours per concurrent investigational drug study that is managed by the pharmacy department was 56.3 hours in 2005/06, compared to 43.8 hours in 2003/04. It is possible that the increasing complexity of drug studies may be increasing the time that pharmacy departments must commit to managing this service.
- The data reported for pharmacy services for renal dialysis patients suggests that this service involves a substantial commitment of pharmacy manpower. The mean drug costs associated with this patient population (\$6454 per patient per year) were also very high, presumably as a result of the expensive erythropoietic agents used in these patients.

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.