

Pharmacy Staffing for Specific Clinical Programs and Pharmacy Services – Pediatric Hospitals

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Since the late 1980s, the Hospital Pharmacy in Canada Survey has gathered and reported data on the state of hospital pharmacy practice in Canada. Many pharmacy managers in Canada routinely use this resource to compare their own pharmacy operations and resources to other hospitals of a similar size and profile (e.g. unit dose or traditional, teaching or non-teaching, etc). Unfortunately, the data for pediatric hospitals has been somewhat limited by the small number of pediatric hospitals in the country, and a relatively low participation rate by pediatric hospitals. The low participation rate may reflect the fact that pediatric hospitals are known to have higher pharmacy resource requirements, causing pediatric pharmacy managers to question the validity of pooling their data with that from adult hospitals. In order to address these concerns, the last few surveys have included a separate analysis of pediatric hospital data. However, the data analysis has been limited to rather broad indicators, such as overall paid hours per patient day.

As part of a separate benchmarking project for pediatric hospitals, a new and expanded benchmarking survey, based on earlier versions of the survey tool used in the Hospital Pharmacy in Canada Survey, was developed in early 2004 and sent out to seven pediatric hospitals in Canada. Hospitals were asked to provide data for 2002/03 for that benchmarking survey. Personal follow-up with each site was undertaken in an effort to maximize the response rate. The survey was completed and returned by respondents from five Canadian pediatric hospitals.

In June of 2004, the survey tool developed for the above-mentioned pediatric benchmarking project was revised slightly to include program-specific drug costs and was then sent out to pediatric hospitals in Canada. However, the response from the pediatric hospitals was very low, probably reflecting the fact that they had completed the original survey just a few months earlier. Hospitals that had participated in the earlier pediatric benchmarking project were contacted and agreed to allow their 2002/03 data to be included in this report. It is hoped that program specific drug costs for pediatric hospitals will be available to be included in future reports.

Type of Drug Distribution and Clinical Services

Since the type of drug distribution system and the extent of clinical pharmacy services can have a significant effect on the human resources required by a pharmacy department, it was felt to be important to document the nature of these services at each comparator facility. Unit Dose/intravenous admixture (UD/IVA) is considered to be the safest and most cost-effective form of drug distribution, but it is also more labor-intensive for Pharmacy departments than systems that use wardstock and multidose dispensing systems. With the exception of one hospital, each pediatric facility reported the provision of a UD/IVA system of drug distribution to most areas of the hospital. The one exception hospital reported that a traditional multi-dose prescription/wardstock system was provided to most of its patient care areas. All of the facilities reported that they provided reasonably comprehensive clinical pharmacy services to most of their inpatient acute care areas.

Staffing Indicators for Specific Inpatient Clinical Programs

The survey results for pediatric inpatient clinical programs are presented in Table K-1 and Table K-2. The small number of pediatric hospitals in this sample made it difficult to separate hospitals into groups based on bed size or type of drug distribution system. The data is therefore presented for all five pediatric hospitals that responded to the benchmarking survey. Interestingly, the pediatric hospital that reported utilizing a traditional drug distribution system to service most of its inpatient clinical programs had inpatient staffing comparable to three of the four UD/IVA hospitals, while one of the UD/IVA hospitals had the lowest paid hours per patient day for most clinical programs. One hospital could not provide program-specific staffing for most of its clinical programs, but that hospital's data was used wherever it was provided.

In Table K-1 the average staffing reported by the five hospitals for their pediatric acute care clinical programs is presented. Because of the small number of participating hospitals, ranges are not reported in order to maintain the confidentiality of the data provided.

Table K-1 Staffing Indicators for High-Acuity Inpatient Clinical Programs

Clinical Program	Average Paid Hours per Patient Day	Number of Reporting Hospitals
All acute care programs	1.4	5
Bone marrow transplant (BMT)/ acute oncology	3.4	4
Pediatric intensive care (PICU)	3.1	4
Neonatal intensive care (NICU)	1.2	4
Medical/surgical	1.0	4

- The staffing indicator “all acute care programs” represents the average of reported paid pharmacy hours/patient day for all acute inpatient pediatric areas. The pediatric inpatient areas included in this analysis are the high-intensity inpatient services (NICU, PICU, BMT/Oncology) and the medium-intensity inpatient services (Medicine, Surgery, Operating Room). Four of the five Canadian pediatric hospitals had very similar results for this indicator, while the fifth hospital reported a value that was approximately one-half of that reported by the other facilities. The average value of 1.4 paid hours per acute inpatient day for the five Canadian pediatric hospitals in this survey is much higher than the average that was calculated for adult hospitals in this year’s survey. It is consistent, however, with the data reported in past Hospital Pharmacy in Canada surveys, and with other reports in the literature related to pediatric pharmacy services.
- Three of the four pediatric facilities that were able to separate out the resources that they commit to BMT/Oncology reported very similar ratios, while the fourth facility again reported values that were approximately one-half of those utilized by the other three facilities. In all four of the facilities, the resource allocation for this patient population is very high as compared to their other acute inpatient programs. This is not surprising, given the volume, complexity and risk of drug therapy in this patient population.
- The distribution of resources for the remaining areas (PICU, NICU, Medicine and surgery) tended to be quite variable among the reporting facilities. This appeared to reflect different models of service delivery that are used in each facility.
- For example, one comparator hospital has three separate satellite pharmacies that service the PICU, NICU and inpatient medical/surgical areas. The 24-hour NICU and PICU satellites are used to provide service not only to the NICU/PICU areas, but also to provide service to the rest of the hospital on evenings, nights and weekends. That facility finds it more effective and efficient to use the critical care satellites as the base of operations for evening, night and weekend service. The staffing resources for those hours appear in the NICU and PICU staffing numerator but the workload associated with providing that service does not. As a result, the NICU/PICU staffing appears very high in that facility, while the staffing figure for other acute inpatient areas appears very low.
- In the case of another hospital, the reported resource allocation to the PICU/NICU areas was substantially lower than their comparators, while their resource allocation to medicine/surgery inpatient beds was substantially higher. This facility provides its distribution services from a single centralized location, and that model may have affected how the resources appear to be allocated between the different acute inpatient areas.

In summary, the Canadian comparator hospitals, with one exception, appeared to have used similar levels of overall resources to deliver pharmacy services to their inpatient pediatric acute care programs. There appears to have been a different allocation of pharmacy resources to specific inpatient programs, but this may be a result of the different models of service delivery that existed among respondents' hospitals.

In Table K-2 the staffing reported by the five hospitals for a number of lower-intensity inpatient clinical programs is presented.

Table K-2. Staffing Indicators for Low-Acuity Inpatient Clinical Programs

Clinical Program	Average Paid Hours per Patient Day	Number of Reporting Hospitals
Mental health	0.31	4
Rehabilitation	0.27	2
Antepartum/postpartum	0.20	4
Long term care	0.07	2

- The average of reported paid hours per patient day for the four hospitals that reported data for their pediatric mental health programs was 0.31. This is similar to the average of 0.26 paid hours per patient day that was reported for the adult mental health population (Figure J-1).
- Only two facilities indicated that they serviced a pediatric rehabilitation program. The average of 0.27 paid hours per patient day reported for servicing this patient population is quite similar to the average of 0.30 paid hours per patient day calculated for adult rehabilitation programs (Figure J-1).
- The average of reported paid hours per patient day allocated to the antepartum/postpartum inpatient program (0.20) was again quite similar to the figure of 0.17 calculated for adult hospitals that service antepartum/postpartum patients (Figure J-1).
- Only two facilities in the comparator group reported that they serviced a long-term care patient population. In these facilities, an average of 0.07 paid hours per patient day was reported for the provision of services to that patient population.

Table K-3 provides data on the pharmacy staffing resources reported for a number of pediatric programs and services for which, with the exception of investigational drug studies, no reliable workload denominator was available. Data is reported as the average of reported total annual hours committed to delivering pharmacy services to the designated program or service. The number of reporting facilities is also presented. Although the data in Table K-3 is of somewhat limited value, it was felt that it might still provide information that pharmacy managers would find useful.

Table K-3 Pharmacy Staffing Resources

Program or service	Average annual pharmacy hours	Number of reporting hospitals
Operating room	505	3
Emergency department	761	3
Oncology clinic	4696	4
Other clinics	1355	5
Ambulatory dispensing	3260	3
Special Access Drug Program	624	4
Home IV program	688	2
Home TPN	305	3
Drug information	3182	5
Drug use evaluation	1738	4
Drug procurement and inventory control	5748	5
Dedicated research positions	2468	3
Dedicated teaching positions	2167	3
Investigational drugs	1807	5
Investigational drugs (Note: This result represents the average hours/concurrent study managed)	41	5

The following comments are provided to supplement the staffing information for a number of the programs and services listed in Table K-3:

- Four of the five pediatric facilities reported that they provided clinical services to their oncology outpatient clinics. Those who reported larger resource commitments indicated that they provided a full range of clinical support services to the oncology program, and served as a provincial resource for pediatric oncology. One pediatric facility indicated that it had no pharmacy resources committed to oncology clinics, but noted that the provincial cancer agency had responsibility for the pediatric outpatient oncology clinics at their site and that extensive pharmacist staffing support to those clinics was provided by the cancer agency.
- The acquisition and management of non-marketed drugs, through the federal government's "Special Access Program", was reported to consume an average of 624 hours of staff time per year by the four hospitals that provided data for this program. Growth in this resource-intensive pharmacy service may be partly driven by an increasing tendency on the part of some pharmaceutical companies to use this as a method of making certain drugs available, without having to go through the time and expense of applying for permission from Health Canada to market their drug in this country.
- Each of the facilities reported the provision of a pediatric drug information service. Availability of pediatric drug information expertise is recognized as an essential requirement within pediatric hospitals. In many cases the major pediatric hospital within a province serves as the provincial pediatric drug information resource.
- Each of the respondents from pediatric hospitals also indicated that they committed resources to the support of clinical investigations. The average of 41 hours per concurrent study managed by the pediatric hospitals is similar to the average value of 43.8 hours per study reported for adult hospitals (Table J-1).

- A drug use evaluation (DUE) program is an important part of a hospital's efforts to insure the appropriate and cost-effective use of drugs. Four of the five pediatric hospitals indicated that they expend pharmacy resources on DUE activities, compared to only seven of 31 adult hospitals (Table J-2), suggesting that DUE may be receiving a higher priority in pediatric than adult hospitals.
- Three respondents reported that their facilities funded time for pediatric pharmacy research activities . The funding of such research activities appears to be more widespread in pediatric hospitals than in adult hospitals, where only four of 31 hospitals reported that such research activity was funded by their facility (Table J-2).

Summary:

This survey has provided information about the overall staffing resources that have been allocated to pediatric pharmacy departments, as well as the internal allocation of those resources to a variety of inpatient and outpatient service areas.