Perceptions of the Professional Pharmacy Services in a Major Canadian Hospital: A Comparison of Stakeholder Groups

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Article Summary

To assess stakeholder opinions about professional pharmacy services, 487 patients, nurses, physicians and pharmacists were surveyed in a large Canadian hospital. Service awareness varied by group and quality was highly ranked, while select clinical, dispensing, education and research activities were ranked as most important.

ABSTRACT

Objective: To determine perceptions of four stakeholder groups regarding awareness, quality and priority of professional services provided by our pharmacy department.

Study Design: A single-centre survey of four stakeholder groups.

Subjects: Patients, nurses, physicians and pharmacists at a large Canadian teaching hospital.

Methods: A 32-item survey was designed to elicit anonymous opinions regarding the drug distribution, clinical, education and research services provided. Surveys were distributed over a 90-day period.

Results: Of the 2,568 distributed surveys, 487 (19%) were returned. Of the 460 surveys analyzed, there were 38 (8%) patient, 276 (60%) nurse, 102 (22%) physician and 44 (10%) pharmacist respondents. Of the 32 services provided by the pharmacy department, patients were the least and pharmacists were the most aware. Nurses and physicians were aware of many of the services provided, but were less aware of services not typically provided by a pharmacy department and those offered in select areas or only to specific stakeholders. Most respondents rated the professional services as excellent or good. Respondents ranked the review of prescriptions for appropriateness; the dispensing of oral, intravenous and total parenteral nutrition preparations; the resolution of patient-specific drug distribution issues; group medication counselling sessions; continuing education programs; and the Clinical Drug Research Program as most important services.

Conclusions: This study has provided us with valuable information about patient, nurse, physician and pharmacist perceptions regarding awareness, quality and priority of patient care, education and research services currently offered by the pharmacy department at this hospital. The survey information will be used in our plans to enhance the awareness, magnitude and quality of professional services that we provide.

Changes in healthcare are having an impact on pharmacy practice. Pharmacists' roles need to continue to evolve as a result of increasingly complex drug therapies (Cipolle et al. 1998), technological advancements (Hepler 1989), information demands and changes in patient and professional colleague expectations. With the current limited financial resources and shortage of pharmacists, it is important that hospital pharmacy departments be prepared to meet the demands of a changing practice.

Pharmacy practice is aimed at optimizing patient outcomes by

The results of this study were presented, in part, as a poster at the Professional Practice Conference of the Canadian Society of Hospital Pharmacists, Toronto, ON, Canada, in February 2003. The abstract for this study has also been published in *J Inform Pharmacother* 11(2002): 408.

addressing medication-related needs in collaboration with the patient and other healthcare professionals (Cipolle et al. 1998). In order for hospital pharmacy departments to address the needs of their stakeholders, it is important to determine the perceptions of these stakeholders regarding the current professional services provided by the pharmacy department.

Perceptions of stakeholder groups are often elicited through survey methodology (Angaran 1991). Surveys have been conducted in other institutions to identify the attitudes of healthcare personnel regarding various aspects of pharmacy practice (Anderson and Winship 1971; Braccini and Shaeffer 1993; Carlson and Tschepik 1991; Cantril et al. 1997; Cukierman-Wilson 1992; Fisher and Pathak 1980; Gaucher and Greer 1992; Guerrero et al. 1990; Lindauer and Breland 1988; Moss et al. 1980; O'Brodovich and Rappaport 1991; Ortiz et al. 1989; Pierson et al. 1990; Ritchey and Raney 1981A; Ritchey and Raney 1981B; Ritchie et al. 1992; Ross and Ryan 1988; Sulick and Pathak 1996; Thompson et al. 1988; Lackner and Manchester 1991). Patients have also been surveyed to determine their satisfaction with specific institution pharmacy programs (Erstad et al. 1994; Schommer and Kucukarslan 1997). To our knowledge, no survey has been conducted within a single centre to determine attitudes of both healthcare personnel and patients regarding professional services. Such a survey would assist in decision-making for changes in departmental operations and practices.

Accordingly, the Pharmaceutical Sciences Clinical Service Unit (CSU) at the Vancouver General Hospital (VGH) conducted a survey to determine stakeholder group (patients, nurses, physicians and pharmacists) perceptions regarding the awareness, quality and priority of currently offered professional services in the areas of patient care, education and research. Findings will be used to assist in further enhancing the scope and quality of services provided by the CSU.

METHODS

Study Design

This study was conducted at VGH, which is a 800-bed (550 acute, 250 long-term care) teaching institution with approximately 20,000 acute care admissions each year. This Canadian institution has a full spectrum of medical and surgical services with approximately one-half of its beds devoted to each general service grouping. General pharmacy services are provided to all patient care areas, while decentralized clinical services are oriented towards medical services, which tend to have a higher incidence of drug-related problems. The study received approval prior to initiation from the University of British Columbia's Behavioural Research Ethics Board and the VGH's Research Committee.

Survey Development

A systematic search of the published literature was conducted to identify any existing validated surveys that could be used for the purpose of this study. None were found that met our objectives. Accordingly, we designed a 32-item survey to administer to all stakeholder groups (Appendix 1). The general principles of survey design as outlined by both Fink (1995) and Jackson and Furnham (2000) were applied. The survey was constructed to elicit anonymous opinions regarding four general categories of services provided by the CSU: (1) drug distribution, (2) clinical, (3) education and (4) research. Responses regarding perceptions in three domains were elicited: (1) awareness, (2) quality and (3) priority of the services provided. Opinions regarding future services and basic demographic information were also requested.

Four healthcare professionals (one nurse, three pharmacists) tested the survey for clarity and the time to completion. Based on their comments, changes were made to the survey and the time to completion was approximately 15 minutes.

Participants

The survey was anonymously administered to four stakeholder groups: (1) patients, (2) nurses, (3) physicians and (4) pharmacists. Consenting and capable patients and healthcare workers who were affiliated with the hospital at the time of the survey distribution were considered candidates for this study. Patients were deemed capable if they could read and understand English; were physically able to complete the survey; and were oriented to person, place and time as judged by the investigator responsible for distributing the survey. Patients located on critical care units and units where the duration of hospital stay is typically less than 24 hours (e.g., emergency, short-stay unit, medical day care) were not approached to participate in this study.

All physicians who were affiliated with the hospital were considered candidates for the study, including medical residents and fellows. Clinical clerks were excluded from the study. All nursing personnel with a mailbox and all pharmacists at the hospital were considered candidates for the study.

Intervention and Data Collection

To enhance healthcare professional participation, advance notice of the survey was published in the December

2001 issue of our pharmacy newsletter (Shalansky et al. 2001). Details regarding the purpose, benefits, confidentiality, time frame of survey distribution, compensation and survey return instructions were provided.

All surveys were distributed with a covering letter over a 90-day study period (December 2001–March 2002). A self-addressed envelope was included to ensure confidentiality and enhance the return rate. Patient care areas were selected in random order for the sequence of patient survey distribution. Surveys were hand-delivered to consenting and capable patients by one of the investigators who was not directly involved in the care of the patient, was not present and did not participate in the completion of the survey and did not otherwise prompt or attempt to influence the patients' responses in any way. Surveys were distributed to the hospital mailboxes of nurses, physicians and pharmacists. Two reminder notices were distributed via e-mail during the survey period to enhance response rate.

Respondents were asked to return the completed survey in the self-addressed envelope provided via internal mail. Healthcare workers were also able to return the survey directly to the pharmacy general office. As a token compensation for survey participation and to improve response rate, participants were offered a voucher for a small coffee or tea (value CAN$1.40) upon completion and return of the survey. Respondents were asked to print their name and hospital location on the back of the enclosed envelope to facilitate their receipt of a voucher. Once received, surveys were separated from the envelopes to ensure confidentiality.

A convenience sample targeted at all accessible stakeholders during the study period was chosen. Based upon previously conducted surveys, we anticipated a 20% return rate for our patient, nurse and physician respondents (Ritchey and Raney 1981A; Ritchey and Raney 1981B; Sulick and Pathak 1996). Considering the source of the survey, a 90% return rate was anticipated for pharmacists. We expected that an overall 20% return rate would be adequate for the purpose of characterizing general opinions and perceptions of the various stakeholder groups.

Data Analysis

All data were entered into a commercial descriptive/inferential database program (SPSS Version 10.1) for subsequent verification and analysis. Respondent demographics and responses were analyzed using des criptive statistical analysis. Surveys with incomplete data for the demographic question "What is your current status?" (question 6.1) were excluded from analysis. For the analysis of the quality of professional services, only those respondents who were aware of the service were included. Missing data for each question were also excluded from analysis.

RESULTS

Response Rate and Respondent Demographics

A total of 2,568 surveys were distributed to the four stakeholder groups during the study period. While 379 inpatients were identified for potential participation, 261 were excluded for the following reasons: refused to participate in the study (50); did not speak and/or read English (59); sleeping or not in their room at time of survey distribution (85); deemed not capable of completing the study (44); or located in an isolation room (i.e., diagnosed with an antibiotic resistant organism) (23). Accordingly, 118 surveys were actually distributed to patients, while 1,708 were distributed to nurses, 654 to physicians and 88 to pharmacists.

Four hundred eighty-seven (19% of those distributed) surveys were returned to the investigators. Of these, 27 surveys were excluded from analysis as respondents failed to identify their stakeholder group. Of the 460 surveys analyzed, there were 38 patient (8% of total, 32% response rate), 276 nurse (60% of total, 15%

Table 1. **Stakeholder Characteristics**

Parameter	Patient	Nurse	Physician	Pharmacist
Number of respondents	38	276	102	44
Median duration of patient stay, days (range)	7 (1–94)	–	–	–
Duration of hospital employment, years (%)				
0–1	–	32 (11)	4 (4)	9 (20)
>1–5	–	65 (24)	15 (15)	15 (34)
>5–10	–	36 (13)	26 (25)	5 (11)
>10–24	–	119 (43)	34 (33)	13 (30)
>25	–	13 (5)	15 (15)	0 (0)
Unspecified	–	11 (4)	8 (8)	2 (5)
Area of practice/stay (%)				
Medicine	8 (21)	119 (43)	53 (52)	19 (43)
Surgery	13 (34)	147 (53)	45 (44)	3 (7)
Other[a]	2 (5)	7 (3)	3 (3)	16 (36)
Unspecified	15 (40)	3 (1)	1 (1)	6 (14)

[a] Includes dispensary-based pharmacists or respondents who indicated their area of practice as both medicine and surgery.

response rate), 102 physician (22% of total, 16% response rate) and 44 pharmacist (10% of total, 50% response rate) respondents.

Table 1 describes the stakeholder group characteristics. Patient respondents were located in several practice areas and were hospitalized for a median of seven days at the time of completion of the survey. Many patients did not specify their location when completing the survey. For nurses and physicians, there was a balanced representation from the medical and surgical practice areas and this generally mirrored the bed distribution in this hospital. Most pharmacist respondents practised in non-surgical areas and this reflects the greater allocation of clinical pharmacists to medical patient care units in the hospital. The majority of nurse and physician respondents had worked at the hospital for at least five years, while pharmacists tended to have a shorter employment history.

Awareness of Pharmacy Services

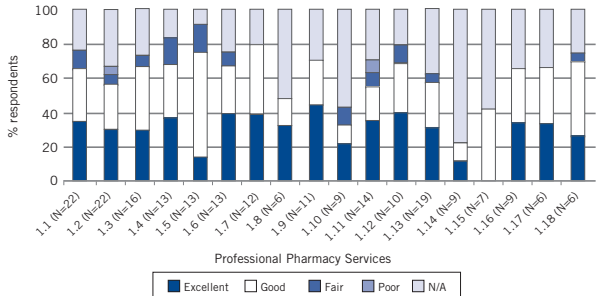
Of the four groups surveyed, patients were the least aware of all the 32 professional services provided (Table 2). Patients tended to be most aware of traditional pharmacist services only (Items 1.1, 1.2, 1.13).

The nurse and physician respondent groups appeared to be well aware of most of the services provided, although they were less aware of some services that were relatively new and not typically provided by a hospital pharmacy department (e.g., website, intravenous support program) and those services offered either in isolated areas only (e.g., group medication counselling, patient self-medication

Table 2. **Stakeholder awareness of professional pharmacy services**

Professional pharmacy services	Patient (%)	Nurse (%)	Physician (%)	Pharmacist (%)
Clinical				
1.1 Dispensary-Pharmacists review prescriptions	63	93	92	100
1.2 Dispensary-Pharmacists resolve patient-specific medication issues	66	93	96	100
1.3 Ward-Pharmacists review medication profiles	47	92	91	98
1.4 Ward-Pharmacists resolve patient-specific medication issues	37	89	81	100
1.5 Ward-Pharmacists monitor patient response to drug therapy	37	86	75	100
1.6 Ward-Pharmacists contribute to drug therapy decision-making on rounds	38	71	80	100
1.7 Ward-Pharmacists review drug levels and provide dosing recommendations	34	90	92	100
1.8 Ward-Pharmacists provide warfarin dosing	17	52	53	100
1.9 Ward-Pharmacists monitor patients for adverse drug reactions	34	69	68	100
1.10 Ward-Pharmacists provide patient medication counselling	30	63	66	100
1.11 Ward-Pharmacists assess drug allergy status	44	84	79	98
1.12 Ward-Pharmacists assess pre-admission medication use	31	63	53	93
1.13 Pharmacists provide drug information	62	94	88	100
1.14 Pharmacy department operates a home intravenous antibiotic program	29	70	82	100
1.15 Pharmacy department operates an intravenous initiation support program	23	57	47	70
1.16 Pharmacy department operates an intravenous device support program	29	64	67	81
1.17 Pharmacy department coordinates a patient self-medication program	17	36	34	79
1.18 Pharmacy department produces patient medication information pamphlets	51	68	68	98
Drug-Distribution				
2.1 Dispensary personnel resolve patient-specific drug distribution issues	47	92	83	100
2.2 Dispensary personnel dispense oral medications	57	98	84	100
2.3 Dispensary personnel dispense intravenous medications	55	98	90	100
2.4 Dispensary personnel dispense total parenteral nutrition	26	98	90	100
2.5 Dispensary personnel produce and distribute medication administration records and profiles	23	95	83	100
2.6 Pharmacy personnel produce the *Formulary Manual*	14	92	86	100
2.7 Pharmacy personnel produce the *Parenteral Drug Therapy Manual*	14	93	76	100
Education				
3.1 Ward-Pharmacists conduct group medication counselling sessions	8	30	25	70
3.2 Ward-Pharmacists provide continuing education programs	22	47	50	84
3.3 Pharmacy department implements strategies to optimize prescribing	25	63	75	95
3.4 Pharmacy department publishes *The Drug and Therapeutics Newsletter*	14	56	98	100
3.5 Pharmacy department publishes a website	17	21	22	89
Research				
4.1 Pharmacy department operates a Clinical Drug Research Program	30	56	68	96
4.2 Pharmacy department conducts independent clinical drug research and publication	28	41	72	95

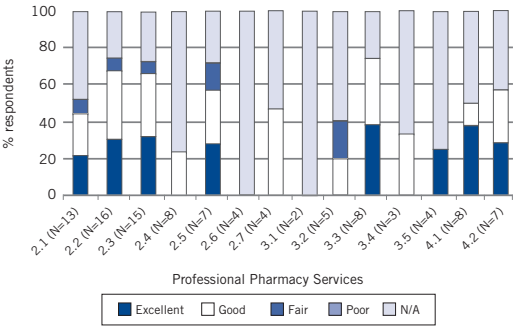
Figure 1. **Patient perceptions of the quality of clinical pharmacy services**



Footnote: N/A – no quality rating provided by respondent; N = number of the 38 patient respondents who were aware of service and provided a quality rating

Survey question	Professional pharmacy services
	Clinical
1.1	Dispensary-Pharmacists review prescriptions
1.2	Dispensary-Pharmacists resolve patient-specific medication issues
1.3	Ward-Pharmacists review medication profiles
1.4	Ward-Pharmacists resolve patient-specific medication issues
1.5	Ward-Pharmacists monitor patient response to drug therapy
1.6	Ward-Pharmacists contribute to drug therapy decision-making on rounds
1.7	Ward-Pharmacists review drug levels and provide dosing recommendations
1.8	Ward-Pharmacists provide warfarin dosing
1.9	Ward-Pharmacists monitor patients for adverse drug reactions
1.10	Ward-Pharmacists provide patient medication counselling
1.11	Ward-Pharmacists assess drug allergy status
1.12	Ward-Pharmacists assess pre-admission medication use
1.13	Pharmacists provide drug information
1.14	Pharmacy department operates a home intravenous antibiotic program
1.15	Pharmacy department operates an intravenous initiation support program
1.16	Pharmacy department operates an intravenous device support program
1.17	Pharmacy department coordinates a patient self-medication program
1.18	Pharmacy department produces patient medication information pamphlets

Figure 2. **Patient perceptions of the quality of drug distribution, education and research services**



Footnote: N/A – no quality rating provided by respondent; N = number of the 38 patient respondents who were aware of service and provided a quality rating

Survey question	Professional pharmacy services
	Drug-Distribution
2.1	Dispensary personnel resolve patient-specific drug distribution issues
2.2	Dispensary personnel dispense oral medications
2.3	Dispensary personnel dispense intravenous medications
2.4	Dispensary personnel dispense total parenteral nutrition
2.5	Dispensary personnel produce and distribute medication administration records and profiles
2.6	Pharmacy personnel produce the *Formulary Manual*
2.7	Pharmacy personnel produce the *Parenteral Drug Therapy Manual*
	Education
3.1	Ward-Pharmacists conduct group medication counselling sessions
3.2	Ward-Pharmacists provide continuing education programs
3.3	Pharmacy department implements strategies to optimize prescribing
3.4	Pharmacy department publishes *The Drug and Therapeutics Newsletter*
3.5	Pharmacy department publishes a website
	Research
4.1	Pharmacy department operates a Clinical Drug Research Program
4.2	Pharmacy department conducts independent clinical drug research and publication

program) or to specific stakeholders (e.g., clinical drug research).

While pharmacists demonstrated the highest degree of awareness of the professional services provided, there were a few specialized services (e.g., intravenous support program, group medication counselling sessions) with which several pharmacist respondents were unfamiliar.

Quality of Pharmacy Services

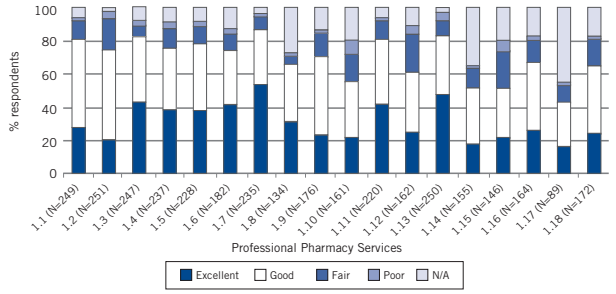
Professional services were rated as excellent or good by the majority of those patient respondents who were aware of the services and offered an opinion (Figures 1 and 2). A small incidence of poor ratings was noted for two of the 18 clinical services (Items 1.2 and 1.11) and one drug distribution service (Item 2.1), although only the latter exceeded 5% of responses.

Professional services were rated as excellent or good by the majority of those nurse respondents who were aware of the services and offered an opinion (Figures 3 and 4). A small incidence of poor ratings was noted for the majority of services; however, this rating exceeded 5% of responses for only four services (Items 1.10, 1.16, 3.1 and 3.2).

Similarly, professional services were rated as excellent or good by the majority of those physician respondents who were aware of the services and offered an opinion (Figures 5 and 6). A small incidence of poor ratings was noted for the majority of services; however, this rating exceeded 5% of responses for only three services (Items 1.6, 2.5 and 3.5).

Finally, the majority of pharmacist respondents who were aware of the services and provided an opinion

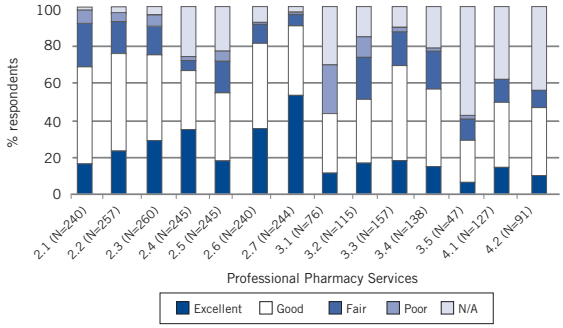
Figure 3. **Nurse perceptions of the quality of clinical pharmacy services**



Footnote: N/A – no quality rating provided by respondent; N = number of the 276 nurse respondents who were aware of service and provided a quality rating

Survey question	Professional pharmacy services
	Clinical
1.1	Dispensary-Pharmacists review prescriptions
1.2	Dispensary-Pharmacists resolve patient-specific medication issues
1.3	Ward-Pharmacists review medication profiles
1.4	Ward-Pharmacists resolve patient-specific medication issues
1.5	Ward-Pharmacists monitor patient response to drug therapy
1.6	Ward-Pharmacists contribute to drug therapy decision-making on rounds
1.7	Ward-Pharmacists review drug levels and provide dosing recommendations
1.8	Ward-Pharmacists provide warfarin dosing
1.9	Ward-Pharmacists monitor patients for adverse drug reactions
1.10	Ward-Pharmacists provide patient medication counselling
1.11	Ward-Pharmacists assess drug allergy status
1.12	Ward-Pharmacists assess pre-admission medication use
1.13	Pharmacists provide drug information
1.14	Pharmacy department operates a home intravenous antibiotic program
1.15	Pharmacy department operates an intravenous initiation support program
1.16	Pharmacy department operates an intravenous device support program
1.17	Pharmacy department coordinates a patient self-medication program
1.18	Pharmacy department produces patient medication information pamphlets

Figure 4. **Nurse perceptions of the quality of drug distribution, education and research services**



Footnote: N/A – no quality rating provided by respondent; N = number of the 276 nurse respondents who were aware of service and provided a quality rating

Survey question	Professional pharmacy services
	Drug-Distribution
2.1	Dispensary personnel resolve patient-specific drug distribution issues
2.2	Dispensary personnel dispense oral medications
2.3	Dispensary personnel dispense intravenous medications
2.4	Dispensary personnel dispense total parenteral nutrition
2.5	Dispensary personnel produce and distribute medication administration records and profiles
2.6	Pharmacy personnel produce the *Formulary Manual*
2.7	Pharmacy personnel produce the *Parenteral Drug Therapy Manual*
	Education
3.1	Ward-Pharmacists conduct group medication counselling sessions
3.2	Ward-Pharmacists provide continuing education programs
3.3	Pharmacy department implements strategies to optimize prescribing
3.4	Pharmacy department publishes *The Drug and Therapeutics Newsletter*
3.5	Pharmacy department publishes a website
	Research
4.1	Pharmacy department operates a Clinical Drug Research Program
4.2	Pharmacy department conducts independent clinical drug research and publication

(Figures 7 and 8), rated the quality of services as excellent or good. A small incidence of poor ratings was noted for only a few services and the rating exceeded 5% for only two services (Items 1.9 and 3.1).

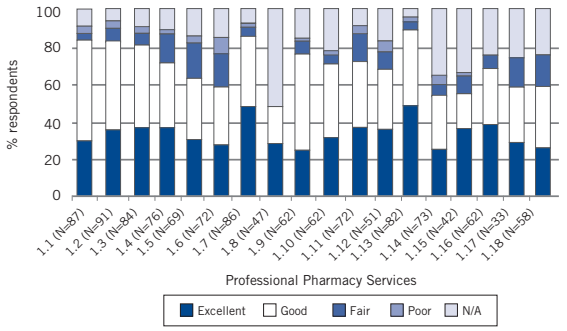
Priority of Pharmacy Services

Of the 18 clinical services provided, the top three services most frequently ranked "as the most important" across all four respondent groups were the review of prescriptions for appropriateness by dispensary-based pharmacists; the review of medication profiles for appropriateness by ward-based pharmacists and the resolution of patient-specific medication issues by dispensary-based pharmacists. All respondent groups ranked the review of prescriptions for appropriateness by dispensary-based pharmacists as the most important clinical service (range 29–39%, by group).

Of the seven distribution services provided, the services most frequently ranked as "the most important" were the resolution of patient-specific drug distribution issues by dispensary-based pharmacists; the dispensing of oral, intravenous and total parenteral nutrition preparations and the production of the Formulary and Parenteral Drug Therapy Manuals. Physician (49%) and nurse (37%) respondents ranked the dispensing of oral, intravenous and total parenteral nutrition preparations as the most important distribution service, whereas patient (60%) and pharmacist (46%) respondents ranked resolving patient-specific drug distribution issues by dispensary-based personnel as the most important distribution service.

Of the five education services

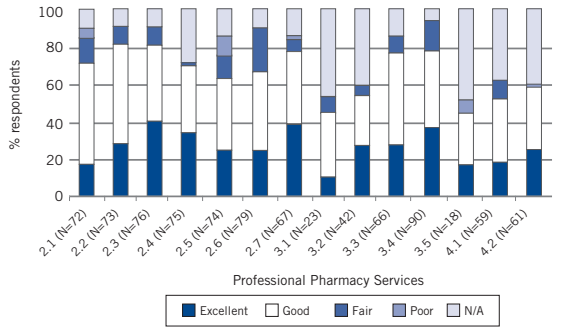
Figure 5. **Physician perceptions of the quality of clinical pharmacy services**



Footnote: N/A – no quality rating provided by respondent; N = number of the 102 physician respondents who were aware of service and provided a quality rating

Survey Question	Professional Pharmacy Services
	Clinical
1.1	Dispensary-Pharmacists review prescriptions
1.2	Dispensary-Pharmacists resolve patient-specific medication issues
1.3	Ward-Pharmacists review medication profiles
1.4	Ward-Pharmacists resolve patient-specific medication issues
1.5	Ward-Pharmacists monitor patient response to drug therapy
1.6	Ward-Pharmacists contribute to drug therapy decision-making on rounds
1.7	Ward-Pharmacists review drug levels and provide dosing recommendations
1.8	Ward-Pharmacists provide warfarin dosing
1.9	Ward-Pharmacists monitor patients for adverse drug reactions
1.10	Ward-Pharmacists provide patient medication counselling
1.11	Ward-Pharmacists assess drug allergy status
1.12	Ward-Pharmacists assess pre-admission medication use
1.13	Pharmacists provide drug information
1.14	Pharmacy department operates a home intravenous antibiotic program
1.15	Pharmacy department operates an intravenous initiation support program
1.16	Pharmacy department operates an intravenous device support program
1.17	Pharmacy department coordinates a patient self-medication program
1.18	Pharmacy department produces patient medication information pamphlets

Figure 6. **Physician perceptions of the quality of drug distribution, education and research services**



Footnote: N/A – no quality rating provided by respondent; N = number of the 102 physician respondents who were aware of service and provided a quality rating

Survey Question	Professional Pharmacy Services
	Drug-Distribution
2.1	Dispensary personnel resolve patient-specific drug distribution issues
2.2	Dispensary personnel dispense oral medications
2.3	Dispensary personnel dispense intravenous medications
2.4	Dispensary personnel dispense total parenteral nutrition
2.5	Dispensary personnel produce and distribute medication administration records and profiles
2.6	Pharmacy personnel produce the *Formulary Manual*
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	Research
4.1	Pharmacy department operates a Clinical Drug Research Program
4.2	Pharmacy department conducts independent clinical drug research and publication

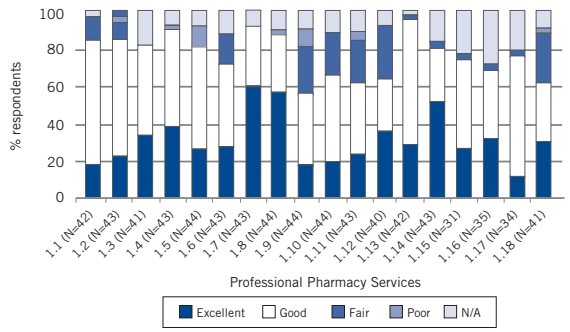
provided, the top three services most frequently ranked as "the most important" were patient group medication counselling sessions, continuing education programs and the implementation of strategies to optimize prescribing. Group medication sessions and continuing education programs were ranked as the most important education services by patient (46%) and nurse (50%) respondents respectively, while physicians (44%) and pharmacists (68%) selected strategies to optimize prescribing as the most important education service.

Across all four respondent groups, the Clinical Drug Research Program (57–82%, by group) was ranked as more important than the independent clinical drug research and publication services (18–43%, by group).

Stakeholder Comments

Stakeholder respondents were also given the opportunity to express their general opinions regarding existing and future pharmacy services. Many patient respondents commented on their lack of awareness of the pharmacy services offered. Nursing and physician respondents tended to express a desire to see existing pharmacy services expanded. Some recommendations included an increase in patient counselling services, healthcare professional in-services and improved access to online drug information. Some respondents also suggested enhancements to existing health record medication documents, decreased drug dispensing turnaround time and improved communication between pharmacists and the balance of the healthcare team.

Figure 7. **Pharmacist perceptions of the quality of clinical pharmacy services**



Footnote: N/A – no quality rating provided by respondent; N = number of the 44 pharmacist respondents who were aware of service and provided a quality rating

Survey Question	Professional pharmacy services
	Clinical
1.1	Dispensary-Pharmacists review prescriptions
1.2	Dispensary-Pharmacists resolve patient-specific medication issues
1.3	Ward-Pharmacists review medication profiles
1.4	Ward-Pharmacists resolve patient-specific medication issues
1.5	Ward-Pharmacists monitor patient response to drug therapy
1.6	Ward-Pharmacists contribute to drug therapy decision-making on rounds
1.7	Ward-Pharmacists review drug levels and provide dosing recommendations
1.8	Ward-Pharmacists provide warfarin dosing
1.9	Ward-Pharmacists monitor patients for adverse drug reactions
1.10	Ward-Pharmacists provide patient medication counselling
1.11	Ward-Pharmacists assess drug allergy status
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1.14	Pharmacy department operates a home intravenous antibiotic program
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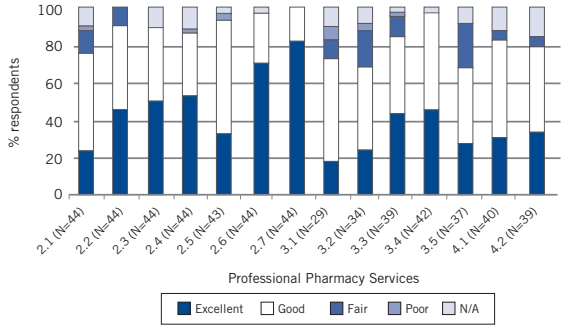
1.16	Pharmacy department operates an intravenous device support program
1.17	Pharmacy department coordinates a patient self-medication program
1.18	Pharmacy department produces patient medication information pamphlets

Figure 8. **Pharmacist perceptions of the quality of drug distribution, education and research services**



Footnote: N/A – no quality rating provided by respondent; N = number of the 44 pharmacist respondents who were aware of service and provided a quality rating

Survey Question	Professional pharmacy services
	Drug-Distribution
2.1	Dispensary personnel resolve patient-specific drug distribution issues
2.2	Dispensary personnel dispense oral medications
2.3	Dispensary personnel dispense intravenous medications
2.4	Dispensary personnel dispense total parenteral nutrition
2.5	Dispensary personnel produce and distribute medication administration records and profiles
2.6	Pharmacy personnel produce the *Formulary Manual*
2.7	Pharmacy personnel produce the *Parenteral Drug Therapy Manual*
	Education
3.1	Ward-Pharmacists conduct group medication counselling sessions
3.2	Ward-Pharmacists provide continuing education programs
3.3	Pharmacy department implements strategies to optimize prescribing
3.4	Pharmacy department publishes *The Drug and Therapeutics Newsletter*
3.5	Pharmacy department publishes a website
	Research
4.1	Pharmacy department operates a Clinical Drug Research Program
4.2	Pharmacy department conducts independent clinical drug research and publication

DISCUSSION

Pharmacists' scope of practice includes broad areas of professional responsibilities, ranging from the provision of traditional services of producing and distributing drug preparations to the non-traditional provision of pharmaceutical care (College of Pharmacists of British Columbia 2000). Pharmaceutical care involves optimizing patient outcomes by addressing a patient's medication-related needs in collaboration with the patient and other healthcare professionals. Pharmacy practice at this hospital involves a broad range of traditional and non-traditional professional services designed to achieve this goal.

This survey was conducted to determine stakeholder group perceptions about our currently offered professional services in the areas of patient care, education and research. Not unexpectedly, patients were the least aware of the 32 services identified in the survey and tended to be most aware of those services traditionally provided by a pharmacist in a community setting. Most nurse and physician healthcare professionals were generally well aware of the various services provided, although we found evidence that awareness of specialized services was often lacking. We anticipate that the awareness for these specialized services would be confined to those individual respondents who utilize them. While we recognized the inherent bias associated with asking pharmacists to provide perceptions about the services they provide, we nonetheless felt the information would be of interest. The survey confirmed our expectations that pharmacists would be the best informed, but we

were surprised to learn that some pharmacists were not aware of all of the 32 services identified. This is likely related to the fact that our department provides some services that are quite atypical and involve only a small number of members (e.g., an intravenous device support program), while some other services are only offered in select areas (e.g., group medication counselling). Some of the pharmacist respondents were quite junior as well, and thus would not yet have had a chance to be exposed to these services.

While general awareness of the professional services provided is certainly important, the perceptions of the quality of these services by aware stakeholders are of equal or greater interest to us. We found that the majority of respondents across all stakeholder groups provided a high rating for the services provided. While low ratings were uncommon, individual patient and group medication counselling services were consistently ranked low by respondent groups. In addition, there were some respondent group-specific services that tended to receive lower ratings than others. For example, nurses appeared to be less satisfied with the drug distribution turnaround time than other groups. Unfortunately, medication counselling is currently undertaken on a selective basis only at this hospital due to the large number of discharges and a shortage of pharmacists to perform this function. While the majority of physicians tended to rank the contributions of ward-based pharmacists to drug decision-making highly, some respondents commented about lack of pharmacists attending rounds in their particular area of practice. Once again, a large number of medical/surgical services, combined with a shortage of pharmacists have resulted in selective participation on patient care rounds at this hospital.

The clinical and drug distribution services ranked as the most important services involve activities coordinated within the pharmacy dispensary (i.e., review of prescriptions for appropriateness by dispensary-based pharmacists, distribution of oral and intravenous medications and resolution of patient-specific drug distribution issues). Although these services encompass both a distribution and a centralized clinical component, the findings suggest that many stakeholders still view the pharmacist's primary role as one that is dispensary-based. Previous studies also suggest that some physicians remain skeptical about the role of pharmacists in the clinical setting (Ritchey and Raney 1981A; Ritchey and Raney 1981B; Ewen 2001). However, the results of the ranking question must be viewed with some caution. Research shows that the number, order and selection of items may bias response to questions requiring ranking (Morrel-Samuels 2002). Respondents will tend to remember the first and last items in a list and will assign them the top and bottom ranks. Services ranked as the most important in this survey appeared in the top of the list within the clinical and drug distribution service domains.

Although other studies exist that assess various healthcare provider and patient perceptions of the role of pharmacists or of clinical pharmacy, this study was unique as perceptions of four groups were attained using a common survey instrument. This single survey distributed to dissimilar respondent groups, can also be viewed as a limitation. Interpretation of services may have varied between respondent groups as no definitions were provided on the survey. The survey may have been too complex for patients, as some of the terminology was technical. Despite the fact the survey underwent a pilot test for issues regarding survey administration, this survey was not tested for validity or reliability. Another limitation of this study is that, while the survey sample was quite large, the return rate was relatively low and varied by response group. Accordingly, we must exercise some caution when attempting to extrapolate the results to the institution as a whole or to other institutions in general.

The results of this survey will assist us in our strategic planning process. We intend to investigate further those services that received lower awareness and quality ratings. We have embarked on a recruitment drive that has resulted in a substantial reduction in the pharmacist vacancies in the department. We have recently implemented an automated dispensing system at one hospital site and expect full implementation within three years. This should address some of our current drug distribution issues. We have also begun new clinical program initiatives aimed at expanding pharmacist-coordinated patient medication discharge counselling. The concept of a patient-initiated medication coun-selling service is under discussion. Additionally, we are investigating methods to inform patients better about the services provided in the hospital environment.

In summary, this study has provided us with valuable information about patient, nurse, physician and pharmacist perceptions regarding awareness, quality and priority of patient care, education and research services currently offered by the pharmacy department at this hospital. This information will be used in our plans to enhance the awareness, magnitude and quality of the professional services we provide to our patient and fellow

healthcare professionals. We encourage others to consider a similar approach to determine the stakeholder perceptions of those current professional services they provide.

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Appendix 1. Survey

A Survey of Perceptions of Pharmaceutical Sciences CSU Professional Services

Below is a list of selected patient care, education and research services that we provide. We are interested in your perceptions regarding awareness, quality and importance of these services. For each service listed, please circle a response under each column that best reflects your opinions.

Selected Services	**Awareness** Indicate your current awareness of and use of service by circling the appropriate response below			**Quality** Rate the quality of service by circling the appropriate response below					**Importance** Please rank the top 3 services you believe to be most important within each section (1 – most important)
	Unaware of service	Aware of but do not use service	Aware of and use service	Excellent	Good	Fair	Poor	N/A	
1. Clinical Services									Rank This Section Only
1.1 Dispensary pharmacists review prescriptions for therapeutic appropriateness (e.g., dose, dosage form, choice of drug for medical condition)	1	2	3	1	2	3	4	5	
1.2 Dispensary pharmacists communicate with other healthcare workers to resolve patient-specific medication issues	1	2	3	1	2	3	4	5	
1.3 Ward-based pharmacists review medication profiles for therapeutic appropriateness (e.g., dose, dosage form, choice of drug for medical condition)	1	2	3	1	2	3	4	5	
1.4 Ward-based pharmacists communicate with the patient and other healthcare workers to resolve patient-specific medication issues	1	2	3	1	2	3	4	5	
1.5 Ward-based pharmacists monitor the patient response to drug therapy to ensure desired therapeutic outcomes are achieved	1	2	3	1	2	3	4	5	
1.6 Ward-based pharmacists contribute to drug therapy decision-making during patient care rounds	1	2	3	1	2	3	4	5	
1.7 Ward-based pharmacists review drug levels in the blood and provide patient-specific dosing recommendations	1	2	3	1	2	3	4	5	
1.8 Ward-based pharmacists provide a warfarin dosing service to select wards in the hospital	1	2	3	1	2	3	4	5	
1.9 Ward-based pharmacists monitor patients to identify, resolve and document adverse drug reactions	1	2	3	1	2	3	4	5	
1.10 Ward-based pharmacists provide patient medication counselling	1	2	3	1	2	3	4	5	
1.11 Ward-based pharmacists assess drug allergy status	1	2	3	1	2	3	4	5	
1.12 Ward-based pharmacists assess pre-admission medication use (i.e., PharmaNet and patient interview)	1	2	3	1	2	3	4	5	
1.13 Pharmacists provide drug information to healthcare personnel	1	2	3	1	2	3	4	5	
1.14 The pharmacy department operates a program to provide intravenous antibiotics to patients in the home setting (i.e., the Home IV Antibiotic Program)	1	2	3	1	2	3	4	5	
1.15 The pharmacy department operates a program to provide intravenous initiation support (i.e., the Intravenous Resource Nurse Service)	1	2	3	1	2	3	4	5	
1.16 The pharmacy department operates a program to provide special intravenous device support (i.e., PIC line program)	1	2	3	1	2	3	4	5	
1.17 The pharmacy department coordinates a patient self-medication program	1	2	3	1	2	3	4	5	
1.18 The pharmacy department produces patient medication information pamphlets	1	2	3	1	2	3	4	5	
2. Drug Distribution Services									Rank This Section Only
2.1 Dispensary pharmacy personnel communicate with other health care workers to resolve patient-specific drug distribution issues	1	2	3	1	2	3	4	5	
2.2 Dispensary pharmacy personnel dispense oral medications	1	2	3	1	2	3	4	5	
2.3 Dispensary pharmacy personnel produce and dispense intravenous medications	1	2	3	1	2	3	4	5	
2.4 Dispensary pharmacy personnel produce and dispense total parenteral nutrition	1	2	3	1	2	3	4	5	
2.5 Dispensary pharmacy personnel produce and distribute medication administration records and medication profiles	1	2	3	1	2	3	4	5	
2.6 Pharmacy personnel produce the *Formulary Manual*	1	2	3	1	2	3	4	5	
2.7 Pharmacy personnel produce the *Parenteral Drug Therapy Manual* (PDTM)	1	2	3	1	2	3	4	5	

Selected Services	**Awareness** Indicate your current awareness of and use of service by circling the appropriate response below			**Quality** Rate the quality of service by circling the appropriate response below					**Importance** Please rank the top 3 services you believe to be most important within each section (1 – most important)
	Unaware of service	Aware of but do not use service	Aware of and use service	Excellent	Good	Fair	Poor	N/A	
3. Education Services									Rank This Section Only
3.1 Ward-based pharmacists conduct group medication counselling sessions	1	2	3	1	2	3	4	5	
3.2 Ward-based pharmacists provide continuing education programs (e.g., in-services) to healthcare personnel	1	2	3	1	2	3	4	5	
3.3 The pharmacy department implements strategies to optimize prescribing (e.g., drug protocols, therapeutic interchange, oral step-down, antibiotic comparison, etc.)	1	2	3	1	2	3	4	5	
3.4 The pharmacy department publishes the *Drugs and Therapeutics Newsletter*	1	2	3	1	2	3	4	5	
3.5 The pharmacy department publishes a website (www.vhpharmsci.com)	1	2	3	1	2	3	4	5	
4. Research Services									Rank This Section Only
4.1 The pharmacy department operates a Clinical Drug Research Program to support clinical drug trials in the hospital	1	2	3	1	2	3	4	5	
4.2 The pharmacy department conducts independent and collaborative clinical drug research and publication	1	2	3	1	2	3	4	5	

5. Future Directions

5.1 What services do you think we should provide that we currently do not?

6. Background Information

6.1 What is your current status? ☐ Patient ☐ MD Resident ☐ MD Fellow ☐ Physician ☐ Nurse ☐ Nursing Administrator ☐ Pharmacist ☐ Pharmacy Administrator ☐ Other _____

6.2 How long have you been at VGH? ___ days ___ months ___ years (please use the unit of time that best applies)

If you are a healthcare worker, please answer the following questions:

6.3 What is your predominant area of practice? ☐ General medicine ☐ Surgery ☐ Other _____

6.4 On average, how many hours/week do you work in the hospital? ___ full-time or ___ hrs/wk

6.5 If you are a patient, what ward are you currently residing on? _____ ward

7. If you have any comments on specific services or activities, please provide them here.