Care Providers' Satisfaction with Restructured Clinical Pharmacy Services in a Tertiary Care Teaching Hospital

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ABSTRACT

Background: At the time this study was undertaken, clinical pharmacy services at the authors' institution, a tertiary care teaching hospital, were largely reactive in nature, with patients and units receiving inconsistent coverage.

Objective: To develop an evidence-based model of proactive practice and to evaluate the satisfaction of pharmacists and other stakeholders after restructuring of clinical pharmacy services.

Methods: The literature was reviewed to determine a core set of pharmacist services associated with the greatest beneficial impact on patients' health. On the basis of established staffing levels, the work schedule was modified, and pharmacists were assigned to a limited number of patient care teams to proactively and consistently provide these core services. Other patient care teams continued to receive reactive troubleshooting-based services, as directed by staff in the pharmacy dispensary. A satisfaction survey was distributed to all pharmacists, nurses, and physicians 18 months after the restructuring.

Results: Of the 26 pharmacists who responded to the survey, all agreed or strongly agreed that the restructuring of services had improved job satisfaction and patient safety and that other health care professionals valued their contribution to patient care. Nurses and physicians from units where pharmacists had been assigned to provide proactive services perceived pharmacist services more favourably than those from units where pharmacist services were reactive. Pharmacists, nurses, and physicians all felt that proactive pharmacist services should be more widely available. Challenges reported by pharmacists included increased expectations for documentation and guilt about "cutting back" services where they had previously been provided.

Conclusions: Restructuring clinical pharmacy services in an evidence-based manner improved pharmacists' satisfaction and created demand from other stakeholders to provide this level of service for all patients.

Key words: clinical pharmacy, restructuring, tertiary care hospital, evidence-based, practice delivery

RÉSUMÉ

Contexte : Au moment où cette étude a été menée, les services de pharmacie clinique à l'établissement des auteurs, un hôpital universitaire de soins tertiaires, étaient en grande partie de nature réactive, les patients et les unités recevant des services inégaux.

Objectif : Créer un modèle de pratique proactive, fondé sur des données probantes, et évaluer la satisfaction des pharmaciens et des autres parties prenantes après la restructuration des services de pharmacie clinique.

Méthodes : On a effectué une revue de la littérature pour déterminer une série de services de pharmacie de base associés aux plus importantes répercussions bénéfiques sur la santé des patients. À partir des niveaux d'effectifs établis, l'horaire de travail a été modifié, et les pharmaciens ont été assignés à un nombre limité d'équipes de soins aux patients pour assurer de façon proactive et constante ces services de base. D'autres équipes ont continué à recevoir des services de dépannage de nature réactive, aiguillés par le personnel à la pharmacie. Un sondage sur la satisfaction a été distribué à tous les pharmaciens, médecins, infirmières et infirmiers, 18 mois après la restructuration.

Résultats : Des 26 pharmaciens ayant répondu au sondage, tous étaient d'accord ou tout à fait d'accord pour dire que la restructuration des services avait amélioré la satisfaction au travail et la sécurité des patients et que les autres professionnels de la santé reconnaissaient leur contribution aux soins aux patients. Le personnel infirmier et les médecins des unités où les pharmaciens avaient été assignés pour fournir des services de nature proactive avaient une perception plus favorable de leurs services que ceux des unités retenues pour y fournir des services de nature réactive. Les pharmaciens, le personnel infirmier et les médecins ont tous estimé que les services pharmaceutiques proactifs devraient être offerts à plus grande échelle. Les défis soulignés par les pharmaciens incluaient des attentes plus élevées en matière de consignation et le fait de se sentir coupables de « couper » des services auparavant offerts.

Conclusions : La restructuration des services de pharmacie clinique fondée sur des données probantes a amélioré la satisfaction des pharmaciens et créé une demande de la part des autres parties prenantes pour la prestation de ce niveau de services pour tous les patients.

Mots clés : pharmacie clinique, restructuration, hôpital de soins tertiaires, données probantes, prestation de services

[Traduction par l'éditeur]

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INTRODUCTION

Clinical pharmacy services and pharmaceutical care have been shown to improve patient outcomes in a variety of inpatient settings, including general medicine teams and critical care units.[1-4] Despite this evidence, provision of these services is inconsistent across hospitals in Canada.[5] In fact, many of the most highly ranked clinical services defined by Bond and Raehl[3] were ranked by pharmacy directors as having low priority.[5] At the authors' site, an urban tertiary care hospital, the delivery of clinical pharmacy services to patient care teams was sporadic, in terms of both the activities performed and the consistency of a pharmacist's presence on any given team. Few pharmacists were involved in bedside rounds, and many pharmacists spent their clinical time reviewing patient profiles for drug interactions missed on initial order entry or performing sporadic therapeutic drug monitoring, counselling patients, or resolving clinical issues identified by the dispensary (e.g., clarifying a stated penicillin allergy in a patient for whom cefazolin had been ordered). Recognizing the need to consistently provide evidence-based clinical services, the leadership team undertook a restructuring of the clinical program to better align pharmacists' activities with those that have had a positive impact on clinically significant patient outcomes.

The University of Alberta Hospital (about 600 beds) and Stollery Children's Hospital (about 100 beds) are located in a single building on the University of Alberta campus in Edmonton, Alberta, and are served by the same inpatient pharmacy department. At the time of this study, these hospitals served as tertiary referral centres for Alberta Health Services – Edmonton (serving a population of about 1 million) as well as much of northern Alberta and the Northwest Territories. Drug distribution services involved centralized order entry by pharmacy staff. Before the realignment described in this report, pharmacists not working a shift in the dispensary were assigned to clinical duties on patient care units; however, pharmacists were not consistently assigned to specific units, and their clinical duties were not defined. Pharmacists worked an average of 75% of their time in the clinical setting and 25% of their time in drug distribution, but not always in defined blocks of time. At the time of program restructuring, the pharmacy department had 39 pharmacists (6 with residency training), 47 technicians, and 6 managers and support staff.

The primary goal was to develop and evaluate an evidence-based model of practice that could be delivered proactively and consistently. This report describes the development of the new clinical program and subsequent evaluation of the restructuring by stakeholders.

Box 1. Regional Clinical Pharmacy Services

Proactive core clinical services* for primary teams
• Perform admission histories
• Participate in bedside rounds with team (daily)
• Individualize medication therapy for patients
• Identify and resolve all drug-related problems
• Provide drug-related monitoring and follow-up
• Provide therapeutic drug monitoring
• Answer drug information questions
• Counsel patients
• Document all suggestions and interventions in the medical chart
Reactive clinical services for secondary teams
• Resolve drug-related problems identified by staff in the dispensary
• Provide therapeutic drug monitoring for selected medications
• Adjust doses for selected patients with renal dysfunction
• Ensure appropriate use of high-cost parenteral medications
• Answer drug information questions and counsel patients upon request (time permitting)
• Document all suggestions and interventions in the medical chart

*Based on Bond and Raehl[3] and Kaboli and others.[4]

METHODS

Development of the Clinical Program

The clinical program was developed in a multistep process. First, the clinical leadership team (the regional clinical practice leaders, including T.M.M.) conducted an informal review of the pharmacy literature and held a consensus meeting to identify a core set of clinical pharmacist services (Box 1). These activities were based on the principles of pharmaceutical care, were demonstrated in the literature to have a significant beneficial impact on patient outcomes, and involved proactive participation of the pharmacist in patient care.[1-4] Recognizing that the time and pharmacist human resources required to provide these services would exceed staffing levels at the institution, a list of "reactive" clinical pharmacy services was also developed; these services would be provided to patients not receiving core services. These reactive services were modest enhancements of the activities already being performed by the pharmacists in the dispensary and included targeted therapeutic drug monitoring (e.g., for vancomycin and aminoglycoside) and follow-up for clinical issues that dispensary staff were unable to resolve.

Second, the number of clinical pharmacists that could be scheduled on a typical workday was determined (n = 14), and a list of all care teams and services within the institution was created (n = 42); the latter included information about whether the team or service used regular bedside rounds. Some services (e.g., internal medicine, critical care) had more than one team providing care, and most teams were not confined geographically to a single unit but rather provided care for patients on several units.

Third, the care teams and services were ranked to determine which teams would receive the core set of proactive pharmacist services. The ranking was based on evidence from the literature and included the use of regular bedside rounds and the acuity of the patients (e.g., more weight was given to critical care beds). The previous experience of the clinical leadership team (many of whom had done residencies and/or had a PharmD degree) was used to ensure that team size, case complexity, and expected pharmacist workload were matched appropriately. No attempt was made to formally assess the needs of individual patients within a given team. The list of ranked teams was matched against the number of pharmacists scheduled on a given day, and 14 teams were selected to receive proactive or "primary" coverage. Primary coverage entailed the consistent provision of proactive clinical pharmacy services and the performance of core services, as outlined in Box 1. The units or teams receiving the proactive level of clinical service were designated as primary units or teams. The remaining teams and units were designated to receive reactive, or "secondary", coverage, as described previously, and were designated as secondary units or teams.

Finally, to achieve consistency and continuity for both the pharmacists and the patient care teams, the pharmacists' schedule was modified by site managers to ensure that each pharmacist spent a minimum of 1 week (i.e., Monday to Friday) with a team. The existing 75:25 ratio of clinical to distribution activities was modified to a split of 3 weeks clinical to 1 week distribution. A patient care team (e.g., team 1) receiving primary coverage would have the same pharmacist (e.g., pharmacist A) on its unit for 3 of every 4 weeks. Pharmacist A would also be responsible for providing secondary coverage to an additional 1 or 2 teams (teams 2 and 3). During the fourth week (when pharmacist A was in the dispensary), team 1 would be covered by a "float" pharmacist (e.g., pharmacist B), who performed primary coverage activities for that team as well as providing secondary coverage for teams 2 and 3. Planned absences (e.g., vacations) were worked into the schedule such that the "float" pharmacist (e.g., pharmacist B) would be assigned to team 1 for the duration of pharmacist A's absence. In the event that pharmacist A was away because of an unplanned absence (e.g., sick day), clinical pharmacist services for team 1 would revert to secondary coverage, and teams 1 to 3 would be managed by the remaining pharmacists. Pharmacists were assigned to teams according to a combination of their previous work with a given team and their overall work experience. Pharmacists not assigned to a particular team functioned as "float" pharmacists. If an opportunity arose for a team pharmacist to be assigned (e.g., new funding allowing the provision of coverage to a new team) or reassigned (e.g., because a pharmacist was going on maternity leave), the new pharmacist was selected by interview.

Implementation and Evaluation of the Program

Once the implementation date was set (February 2006), site managers and clinical practice leaders reviewed the planned changes with pharmacy staff and other stakeholders, such as program directors and lead physicians. Neither the pharmacy staff nor the stakeholders were directly consulted in the development of the program; rather, they were informed in advance (by formal presentation) about the change that the department would be implementing and the rationale for the change, with emphasis on the benefits of a quality versus quantity approach to patient care. Staff and other stakeholders were also encouraged to provide feedback before implementation. Of note, minimal feedback was received, and no significant changes were made to the program as a result of that feedback. In tandem with the implementation of this restructuring at the 2 hospitals, regional training to build skills was also under way to better prepare pharmacists for the clinical activities involved (e.g., documentation).

Eighteen months after the new program was implemented (i.e., in July 2007), satisfaction surveys were conducted to evaluate pharmacists', nurses', and physicians' impressions of the clinical restructuring, as well as the contributions of the clinical pharmacists to patient care within daily practice. A separate survey was designed for each of the 3 professions, and the questions and statements in the survey were based on the core set of clinical pharmacist services. The survey for pharmacists consisted of questions on overall job satisfaction, the pharmacist's perception of his or her contribution to patient care after the restructuring, and perceptions of workload. The surveys for nurses and physicians consisted of questions to elicit perceptions about the pharmacist's availability, the pharmacist's collaboration with other members of the health care team, the perceived value of the pharmacist, and respondents' awareness of the pharmacist's activities in patient care (e.g., medication reconciliation, team rounds, facilitation of discharge). Most questions consisted of statements with 5 options, ranging from "strongly agree" to "strongly disagree". The survey also included a few open-ended questions. The survey was created through an online service (SurveyMonkey), and a link to the survey was distributed to all pharmacists and physicians by e-mail. Nurses on each unit received hard copies of the survey from the student investigators (C.R. and J.X.). The surveys were distributed for about 1 month with reminders at 2 and 4 weeks. Completed surveys were collected and aggregated anonymously. Staff pharmacists were aware of the surveys of nurses and physicians but were not involved in the development, delivery, or analysis of the surveys.

All pharmacists, nurses, and physicians at the 2 hospitals were eligible and were encouraged to complete the survey, and those who completed a survey were included in the final analyses. For nurses, the data were categorized by proactive core

service units (designated "primary") or reactive service units (designated "secondary"). The data were further divided into subgroups of specific programs or units. For physicians, the data were categorized by primary or secondary units and by rounding and nonrounding units. Summary statistics were used to examine the frequency distributions for each question, and written comments were aggregated. Because this was a quality improvement initiative, ethics approval was not required.

RESULTS

During the evaluation period of July–August 2007, a total of 26 completed surveys were received from pharmacists, 223 from nurses, and 92 from physicians. All of the completed surveys were included in the final analyses. Analyses of results were descriptive, and inferential statistical analyses were not performed.

The response rate for pharmacists was 58% (26 of 45). It was difficult to calculate the exact response rates for nurses and physicians, because the e-mail messages to physicians were distributed by medical administration staff, and the nurses received hard copies; as such, the denominators were unknown. Estimated response rates, based on estimated numbers of nurses and physicians working at the hospital, were 6% for both nurses (223 of 4000) and physicians (92 of 1500).

Survey of Pharmacists

Of the 26 pharmacists who responded, all agreed or strongly agreed that the restructuring of services by participating in decentralized clinical activities improved job satisfaction, that other health care professionals valued their contribution to patient care, and that patient safety was improved (n = 26 or 100% for all 3 questions) (Figure 1). As well, most pharmacists either agreed or strongly agreed that they had enough time to complete documentation after a clinical intervention (n = 15 or 58%) and that the expected workload for a clinical pharmacist covering a primary unit was reasonable (n = 19 or 73%). The majority of pharmacists shared the belief that most units or programs should have a clinical pharmacist (n = 25 or 96%). Challenges reported by pharmacists related to increased expectations for documentation and a sense of guilt about "cutting back" services that had been provided previously. Although the majority of pharmacists reported that the workload was manageable, they also expressed the view that the

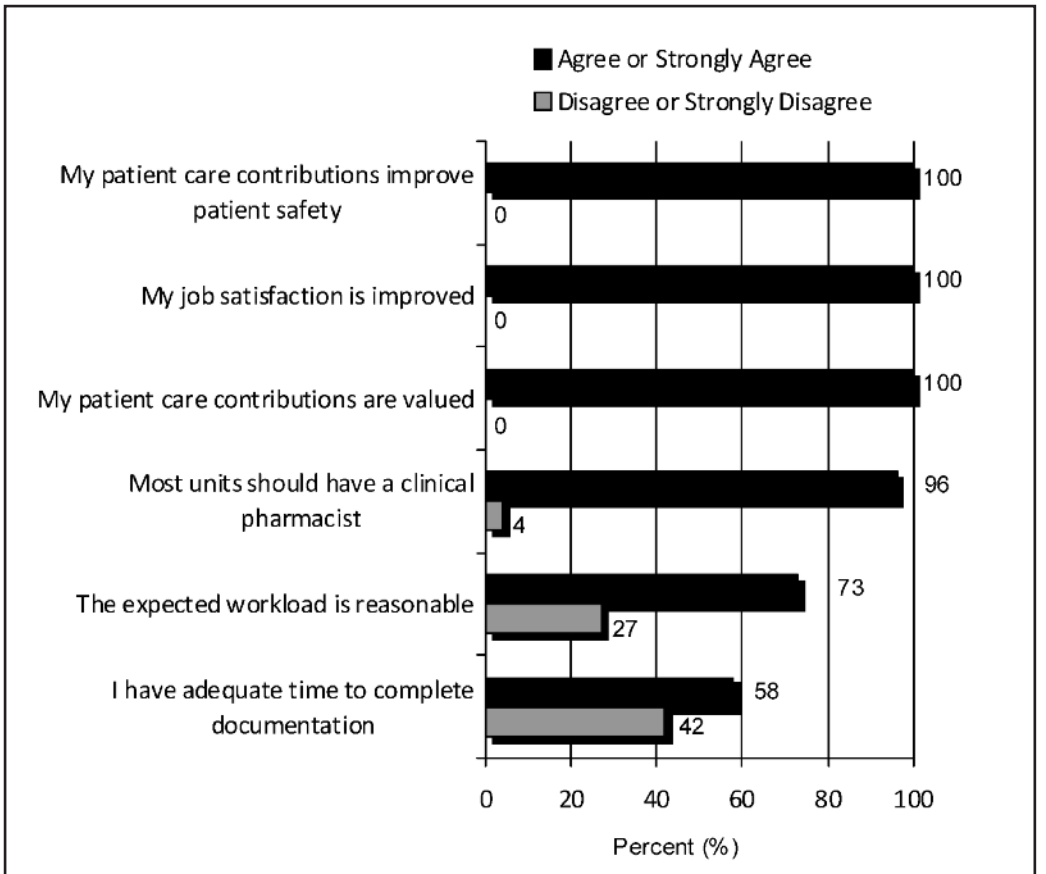

Figure 1. Responses to survey of pharmacists.

workload could be overwhelming on busy days or when other pharmacists covering primary units were sick, which resulted in more secondary units to be covered by those left working. Some pharmacists expressed the desire for fewer secondary units as a way to alleviate the workload. Others expressed the need for primary coverage for secondary units, because of the risk of failing to identify and address drug-related problems to the same extent on these units.

Survey of Nurses

Of the 223 nurses who responded, 126 were from primary units and 97 were from secondary units. Nurses from primary units were more likely than nurses from secondary units to agree or strongly agree that pharmacists were available and valuable, that they collaborated with the team, and that they resolved drug-related problems (Figure 2). The nurses from the primary units felt that clinical pharmacists represented a valuable resource and that they were both helpful and knowledgeable. As well, they believed that pharmacists were effective in teaching patients and that the pharmacists' presence improved patient safety. The nurses from secondary units expressed a desire to have clinical pharmacists on their units, and they believed that having clinical pharmacists would be valuable and beneficial.

Survey of Physicians

Of the 92 physicians who responded (including staff physicians, specialists, medical residents, and medical students), 49 were from primary units and 46 from secondary units, with 3 physicians working in both types of units. Similar to the results from the survey of nurses, physicians from primary units were more likely than those from secondary units to agree or strongly agree that pharmacists were available and valuable, that they collaborated with the team, and that they resolved drug-related problems (Figure 3A). A total of 51 physicians with rounding practices were identified, and 43 physicians were identified as participating in nonrounding practices, with 2 of the physicians being members of both rounding and nonrounding teams. Physicians from the rounding teams perceived the role of the pharmacist more favourably than physicians from the nonrounding teams (Figure 3B).

Perceptions of Nonpharmacist Professionals

The comments of nurses and physicians from units where pharmacists were assigned to provide proactive services were more favourable toward pharmacist services than those from units where pharmacist services were reactive. Pharmacists, nurses, and physicians all felt that proactive pharmacist services should be available for all units. Nurse and physician respondents did not report any challenges related to the restructuring of clinical pharmacy services. Most comments from respondents from primary units praised their respective pharmacists, whereas the respondents from secondary units expressed a desire for a dedicated pharmacist for their respective units to do more than "vancomycin and gentamicin levels".

DISCUSSION

Despite initial concerns that staff pharmacists would be resistant to a substantial change to their practices, pharmacists were generally satisfied with the new structure and felt that their contributions to patient care were valued. Challenges experienced by pharmacists included a sense of guilt for not

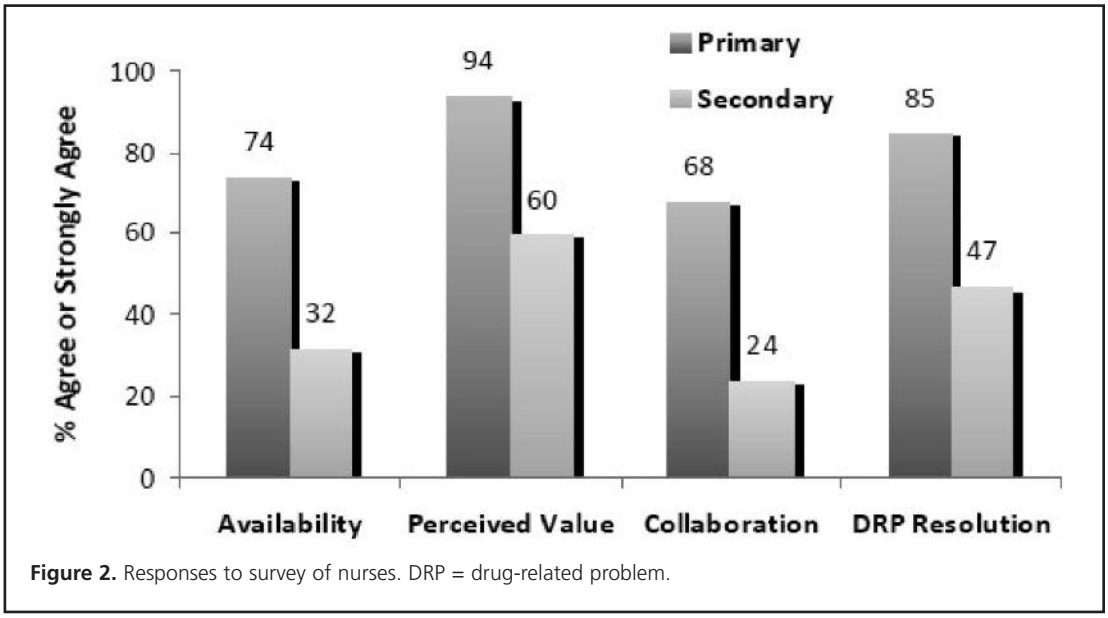

Figure 2. Responses to survey of nurses. DRP = drug-related problem.

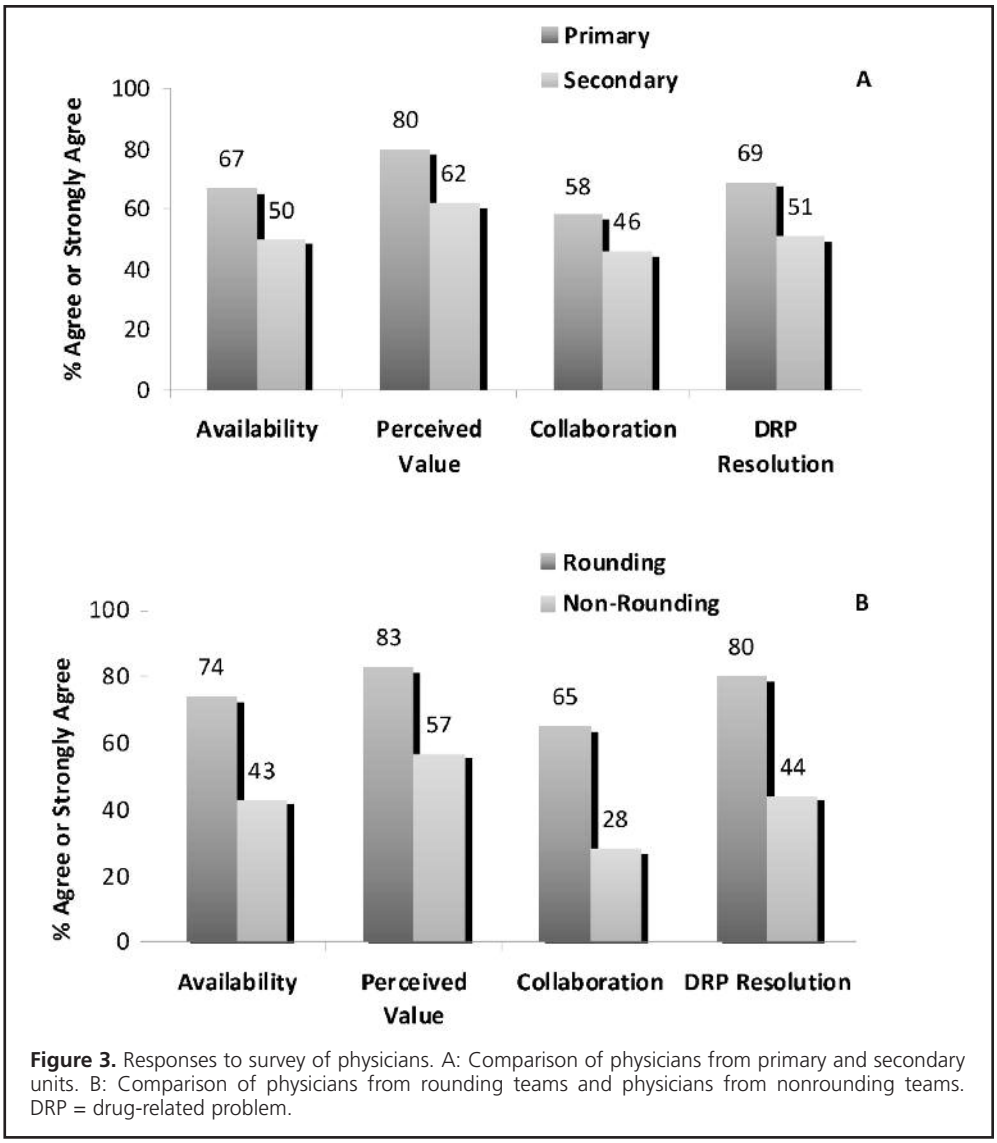

Figure 3. Responses to survey of physicians. A: Comparison of physicians from primary and secondary units. B: Comparison of physicians from rounding teams and physicians from nonrounding teams. DRP = drug-related problem.

providing the same level of coverage to secondary teams and programs and growing pains in implementing documentation into their practices.

Physicians and nurses from primary teams consistently rated their satisfaction with pharmacist services higher than those from secondary teams and programs. The visibility and perceived value of pharmacists were clearly greater in areas where their presence had been enhanced. As well, physicians and nurses from teams receiving secondary coverage expressed a desire to have core services expanded to their units, which was an anticipated effect of the restructuring.

Several factors contributed to the success of this restructuring. First and foremost, the commitment of management, clinical leadership, and staff pharmacists in making this change work cannot be overstated. In presenting the proposed changes to pharmacy staff and other stakeholders, the clinical leadership team highlighted the benefits of being able to focus on and provide quality care to a smaller group of patients, the benefits of pharmacists being integrated into patient care teams, and the advantages of having a consistent pharmacist presence with a single team. Although some pharmacists were not pleased with the change, the majority embraced the challenge and worked with the clinical leadership to develop their skills and succeed. Many of those who opposed the change found other roles within the organization, which they felt were a better fit for their skill sets (e.g., 3 of the 39 pharmacists in the department [8%] chose to work solely in the dispensary). Although the approach to the restructuring was not consultative, we felt that we were responsive in addressing the needs of pharmacy staff, while still leading practice change forward in this institution.

Second, the system of centralized order entry (implemented about 1 year before the clinical restructuring) greatly enhanced the feasibility of this project. Before the implementation of central order entry, pharmacists attempted to enter or verify

orders from the units or satellite pharmacies in addition to providing some aspects of clinical service. Although the actual time spent entering orders was not excessive under the old model, the "flow" of a day would be broken up by multiple requests from nursing staff to address issues as they arose, and the pharmacist's primary responsibility to perform order entry would supersede any other clinical activity.

Finally, we feel that assigning pharmacists to clinical teams rather than geographic units gave the pharmacists greater opportunities to integrate into teams, to become known by the physicians and nurses with whom they worked, and thereby to enhance their contribution to patient care. It is likely that the structural changes in service delivery (e.g., scheduling, assignment to a team) accounted for much of the increased job satisfaction reported by the pharmacists. However, team-based activities, such as daily bedside rounds, have improved the integration of pharmacists into their respective teams, and the provision of core services has likely contributed indirectly to this satisfaction as well. Ultimately, the rationale for restructuring services was not to improve pharmacists' satisfaction, but rather to improve patient care. The collection of clinical benchmarking data did not begin until the fall of 2006 (i.e., 9 months after the restructuring), but with the addition of more teams to receive primary coverage and the implementation of this practice model in additional hospitals in the Edmonton area, pharmacists' direct contact with patients and presence at bedside rounds have increased. As well, a recent randomized controlled study evaluating this model of practice within the University of Alberta Hospital and 2 other institutions in the Edmonton region demonstrated that this evidence-based, proactive model increases both the quantity and the quality of pharmacists' interventions.[6] As such, we believe that we have achieved both an increase in pharmacists' satisfaction and improvements in patient care.

Few reports in the literature describe a restructuring of pharmacy services to incorporate direct patient care or pharmaceutical care, and within these, little detail is provided regarding the department's decision-making process or any subsequent feedback from stakeholders.[7-10] As well, the most recent Hospital Pharmacy in Canada Survey suggested that Canadian hospital pharmacy departments still do not consistently provide or prioritize clinical services that have been shown to improve patient outcomes.[5] A possible explanation for this inconsistency between known beneficial services and actual practice is the uncertainty of how best to deploy clinical pharmacist services. For example, should the same lower intensity of care be provided to all patients, or should a higher intensity of care be provided to selected patients?[11,12] Our management team recognizes that limited resources make it impossible to provide pharmaceutical care for all patients in these 2 institutions; therefore, we developed a process for appropriately distributing pharmacist resources, as described in this report.

This type of practice change entails several challenges. One issue not captured by the survey of pharmacists was the need for increased training and mentoring of pharmacists with practice change. As noted by Holland and Nimmo,[13] merely changing practice structure does not ensure success, unless the other components (motivational strategies and learning resources) are addressed concurrently. The clinical leadership team attempted to provide some defined training to the pharmacists (e.g., training for documentation), but it became apparent that more direct mentorship was required to prepare pharmacists to interact successfully as members of the multidisciplinary health care teams and to implement pharmaceutical care into their respective practices. This type of mentorship is resource-intensive and is best employed on initial hiring of a new pharmacist.

The limitations of this survey study included low response rates from nurses and physicians and limited capture of data from physicians providing care to multiple units or teams. As well, the survey was conducted during a period when staff turnover had led to shortages of trained staff for the teams receiving primary coverage, which compounded the workload for the remaining pharmacists, as several primary teams were temporarily converted to secondary coverage. This might have influenced pharmacists' perceptions of their workload. We feel that many of the comments about workload were linked to this problem.

Implications

The success of this restructuring has solidified plans for similar restructuring at the other hospitals within the regional responsibilities of our clinical leadership team. Although modifications of the model may be needed to reflect the size of individual hospitals, the overarching principle is to provide proactive pharmaceutical care to patients with high needs. As part of this approach, the expectations for pharmacists' duties have been clearly delineated in a policy document. It is intended that this document will be referred to as part of ongoing practice review for pharmacists within Alberta Health Services. A structured clinical orientation combining didactic lectures, case-based study, workshops, and a direct mentorship component has been developed for new staff. The job descriptions for pharmacists have also been rewritten to include these new duties.

Another benefit of this restructuring has been the demand among teams and programs receiving secondary coverage for pharmacists to be assigned to their teams. The clinical leadership team and site managers have been able to leverage that support to request additional resources for assignment of pharmacists to patient care teams. With the addition of 12

pharmacist positions through new funding or through reassignment from other duties, we have increased the primary coverage from 14 (33%) to 26 (62%) of the 42 teams in the hospital. Further expansion of primary coverage may be realized in the future through additional restructuring in the distribution system (e.g., by using technicians to the full scope of their abilities), thus allowing more pharmacists to provide clinical coverage. Ultimately, it is envisioned that the department will move from a 3 week clinical to 1 week distribution model to a model in which pharmacists no longer work any distribution shifts. This would remove the need for "float" pharmacists and would allow assignment of a dedicated pharmacist to even more teams and patients.

CONCLUSIONS

Restructuring clinical pharmacist services to provide team-based proactive pharmaceutical care enhanced the satisfaction of pharmacists, nurses, and physicians and created a demand for more clinical pharmacist services. Further implementation of this structure will require resource allocation to improve training and mentoring for pharmacists.

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