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Redesigning the clinical pharmacy practice model at a psychiatric hospital

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Abstract

Introduction: Integrated, patient-centered clinical pharmacy services have been shown to improve patient outcomes in a variety of settings, including mental health. In this article, we describe and report the impact of a restructured clinical practice model that incorporated direct patient care by pharmacists implemented at a psychiatric facility in Edmonton, Canada. The purpose of redesigning the clinical pharmacy program was to deliver proactive pharmacist care through integrated clinical pharmacy services and to better align pharmacists' activities with those that have been reported to have a positive impact on patient outcomes.

Methods: Pharmacists' documentation notes in medical records for patients admitted and discharged from the hospital at four different time periods were reviewed. For each time period, the number, type, and documentation rate were measured and compared using a Student *t* test with correction for unequal variances. Significant change was defined as $P < .05$. Documentation rates were also compared for short-stay versus long-stay patients.

Results: A consistent and statistically significant increase was found in pharmacists' clinical notes per chart from 0.15 to 1.5 ($P < .001$) after implementation of the redesigned clinical practice model. The proportion of clinical notes also increased from 22% in the preimplementation period to up to 68% in the current period. This indicates that pharmacists were spending proportionally more time on proactive versus reactive care. Documentation rates also increased regardless of the patients' length of stay.

Discussion: The redesigned clinical practice model enabled a successful transition of the pharmacists' role, from being predominantly reactive to becoming more proactive and integrated.

Keywords: psychiatric, pharmacy, practice

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Introduction

Inpatient clinical pharmacy services have significantly changed in the past 20 years. The focus of pharmacy practice has shifted away from the dispensary to the

provision of pharmaceutical care. Pharmaceutical care relies on pharmacists adopting a patient-centered model, proactively assisting with evidence-based medication selection, optimizing patient medication regimens in a collaborative manner with members of a multidisciplinary care team, and collectively taking responsibility for each patient.[1,2] These integrated, patient-centered clinical pharmacy services have been shown to improve patient outcomes in a variety of settings, including mental health.[3–9]

At the authors' site, a 305-bed, urban, tertiary care, psychiatric hospital, the delivery of clinical pharmacy services was considered reactive in nature; that is, pharmacists' interventions were mostly triggered by prescribing errors or in response to requests from other health care providers. Few pharmacists were involved in patient care rounds, and many pharmacists spent their clinical time reviewing patient profiles for drug interactions, clarifying orders, or answering drug information questions. Direct patient care was largely sporadic and mostly limited to resolving clinical issues identified by the dispensary.

Recognizing the need to consistently provide evidence-based clinical services, the leadership team undertook a restructuring of the clinical practice model to better align pharmacists' activities with those that have been reported to have a positive impact on patient outcomes. The goals of redesigning the clinical practice at the hospital were twofold: first, to deliver proactive pharmacist care, and second, to realign the clinical services provided by pharmacists with the clinical pharmacy practice vision for the institution, that is, pharmacists working to full scope of practice in support of quality care that is accessible and sustainable.

This report describes how the clinical pharmacy services were redesigned in a psychiatric hospital to incorporate proactive patient care by pharmacists and evaluates the impact of this realignment of clinical services by comparing the type of pharmacists' clinical activities as documented in the patients' medical charts before and after its implementation.

Methods

Redesigned Clinical Practice Model

This project was conducted at a 305-bed psychiatric hospital that treats patients with severe mental illnesses; units are dedicated to adult acute psychiatry, forensic psychiatry, and extended rehabilitation psychiatry for complex patients with multiple disabilities. The ratio of clinical pharmacists to patients at the time was 1:76, and pharmacists mostly provided reactive services. The redesigned clinical practice model was developed over a 9-month period (from March to October 2011) and implemented as of November 1, 2011.

BOX 1: Core services provided by pharmacists in the redesigned clinical practice model

- Perform admission histories
- Interview patients on admission
- Perform initial patient assessment
- Formulate and implement an individualized medication therapy plan
- Participate in the multidisciplinary care team patient care rounds
- Perform ongoing patient assessments to monitor medication therapy
- Answer drug information questions from patients and members of the multidisciplinary care team
- Participate in patient education
- Provide seamless care at discharge or transfer
- Document all suggestions and interventions in the medical record

Recognizing that the time and pharmacist human resources required to provide proactive care for all inpatients would exceed staffing levels at the institution, under the redesigned clinical practice model, pharmacists were to primarily provide proactive direct patient care services to all acute inpatients (including patients in acute forensic psychiatry) as integrated members of a multidisciplinary care team (Box 1). Reactive clinical pharmacy services were to continue being provided to all patients in nonacute beds. Reactive clinical pharmacy services included basic patient medication monitoring performed by a pharmacist in the dispensary during order entry or by nondispensary pharmacists, referred to as the "clinical float." On a rotational basis, all clinical pharmacists were to perform the duties of a clinical float to patients in nonacute beds on request by staff in those units or as identified by the dispensary. Reactive services included activities that were already being performed by the

BOX 2: Clinical services provided by clinical float pharmacists

- Resolve drug-related problems identified by staff in the dispensary
- Clarify orders from nonacute units
- Screen for drug interactions
- Perform medication reviews for patients on extended rehabilitation care (on request)
- Answer drug information questions from patients and members of the multidisciplinary car team (on request)
- Participate in discharge patient education (on request)
- Perform basic documentation of suggestions and interventions in the medical record

BOX 3: Description of the four audit periods

Preimplementation period: Before March 2011, the time of project initiation.

Transitional period: Between March 2011 and the end of October 2011, the period when the redesigned clinical practice model was being developed and discussed with the clinical staff. During this period, pharmacists also had educational sessions on proactive practice and on documentation strategies.

Postimplementation period: After November 2011 and up to 12 months after the redesigned clinical practice model was introduced to the multidisciplinary care team and implemented throughout the hospital.

Current period: After November 2012, including the review of medical charts of patients who were still on their respective units as of August 14, 2013. This period was included to evaluate the sustainability of the project past the 1-year mark of its implementation.

BOX 4: Description of clinical notes

Medication History: Notes detailing medication use before admission (including best possible medication history) and complete summaries of all previous medications used by patient in previous hospitalizations.

Initial Assessment and Formulation on the Care Plan: Notes detailing initial patient interview and mental state and medication use assessment, which may or may not have included a medical history and/or a comprehensive care plan for that patient's medication management.

Ongoing Assessment and Medication Monitoring: Notes detailing how patients are responding to a medication regimen, obtained by interviewing the patient, discussing the patient with members of the multidisciplinary care team individually or during patient care rounds, monitoring laboratory results, or monitoring for emergent adverse effects of drug therapy.

Patient Education: Notes detailing any discussion with patients in relation to their medication therapy where the pharmacist provided verbal or written information to the patient about one or more medications.

Treatment Recommendation: Notes detailing the pharmacist's recommendation to resolve patient-specific medication-related problems based on the results of the patient assessment.

Seamless Care: Notes detailing the pharmacist's activities to facilitate a patient's transition to community care, such as arranging discharge prescriptions, ensuring adequate coverage of medication costs, and communicating with community pharmacies or mental health clinics.

pharmacists before the implementation of the redesigned clinical practice model (Box 2).

To ensure consistency in the provision of proactive clinical pharmacy services, and after several consultation meetings between the leadership team and front-line staff (including nurses and psychiatrists), pharmacists were assigned to a specific multidisciplinary care team in all acute care units. In addition, on a rotational basis, each pharmacist's schedule was modified to accommodate 1 week of clinical float services to all nonacute units. The target ratio of clinical pharmacists to patients was 1:35 for all acute care units and 1:76 for nonacute units.

Evaluation

Pharmacists' documentation notes in medical records for patients admitted and discharged from the hospital at four different time periods were reviewed. For each time period, the medical charts of discharged patients were randomly selected from units where pharmacists had been fully integrated into multidisciplinary care teams. The four audit periods are outlined in Box 3.

Pharmacist documentation was categorized as simple order clarifications that resulted from pharmacists' reactive practice or as clinical notes that resulted from pharmacists' proactive practice. Clinical notes reflect the core clinical activities that are expected of clinical pharmacists under the redesigned clinical practice model, as summarized in Box 1. Clinical notes were further categorized as described in Box 4.

Additional information that was gathered for each patient included age at admission, gender, medical diagnosis, and length of stay (LOS). The LOS was divided into short (for patients whose LOS was below the median for patients in the audited period) or long (for patients whose LOS was above the median). For patients who had their charts audited after their discharge (ie, the preimplementation, transitional, and postimplementation periods), the progress notes for the entire LOS were available for review and were included in the data. For charts of patients in the current period, progress notes were often thinned in the charts to keep them to a manageable size, in which case whatever was available on the unit was used to generate the data. This meant that a separate measure of "chart days," as opposed to LOS, was used to describe the number of days' worth of progress notes that had been reviewed for the audit. For the chart audits of patients in the preimplementation, transitional, and postimplementation periods, the number of chart days was equal to the LOS, but in the current-period audit the number of charts days was less than the LOS. The use of chart days was important in that it could be used to describe the rate at which pharmacist documentations were included in patient charts for each of the four audit periods.

The documentation rate was defined as the average number of documented pharmacist interventions divided by the average number of chart days included in a given audit period. This method produces a measurement with units of documentations per chart day that was used to quantify and compare how often pharmacists were

TABLE 1: Demographics of patients selected for medical chart audit for each study period

	Preimplementation period	Transitional period	Postimplementation period	Current period
Age (years)				
Mean (±SEM)	36 (3)	38 (2)	40 (2)	38 (2)
Sex (n)				
Men	22	24	26	23
Women	12	11	9	13
Length of stay (days)				
Mean (±SEM)	47 (10)	44 (5)	35 (4)	135 (68)

SEM=standard error of the mean.

performing and documenting clinical activities. Rates were also calculated for patients who had short stays and those who had long stays. This was intended to provide a means of determining whether short-term patients received a different degree of clinical pharmacist interventions than long-term patients.

A two-tailed *t* test was used to compare average documentations per chart as well as documentation rates for each time period. An F-test determined that variances were not equal between all groups, so samples were compared using the Welch's *t* test to allow for unequal variances between sample groups. The threshold for significance was defined as $P < .05$.

Results

A total of 140 patient medical charts were audited for pharmacists' documentation: 34 for the preimplementation period, 35 each for the transitional and postimplementation periods, and 36 for the current period. Table 1 presents the age, gender, and LOS for the patients whose charts were selected for the audit. The most frequent psychiatric diagnosis was schizophrenia (31%, 44/140) followed by bipolar affective disorder (25%, 35/140).

Table 2 presents information on the total number of charts reviewed and the type of pharmacists' documentation notes identified with a breakdown for the number of order clarifications and clinical notes identified for each of the study periods. Overall, the number of charts that contained pharmacist documentation increased from 47% in the preimplementation period to 81% in the current period.

A consistent increase in the number of pharmacists' clinical notes per chart was noted throughout all of the periods audited; the difference between periods was also statistically significant when comparing the preimplementation period to the transitional, the postimplementation, and the current periods ($P = .02$, $P < .01$, and $P < .001$, respectively); and also when comparing the transitional and the postimplementation periods to the current period ($P = .02$ and $P < .01$, respectively). This trend is illustrated in Figure 1. The number of order clarification notes per chart was generally consistent throughout all periods, and no statistically significant differences between the four audited periods were found. Because the number of clinical notes increased and the number of order clarification notes remained the same, the proportion of clinical notes increased from 22% in the preimplementation period to 68% in the current period. This indicates that pharmacists were spending proportionally more time on proactive versus reactive care.

Documentation rates (number of documentation notes per chart day) for the long-term group of patients showed

TABLE 2: Charts containing pharmacists' documentation notes for each study period

	Preimplementation period	Transitional period	Postimplementation period	Current period	All periods
Number of charts audited	34	35	35	36	140
Percent of charts with documents	47%	57%	43%	81%	57%
Number of documents	23	41	31	79	174
Number of order clarifications	18	17	12	25	72
Percent of documents that are order clarifications	78%	41%	39%	32%	41%
Number of clinical notes	5	24	19	54	102
Percent of clinical notes	22%	59%	61%	68%	59%

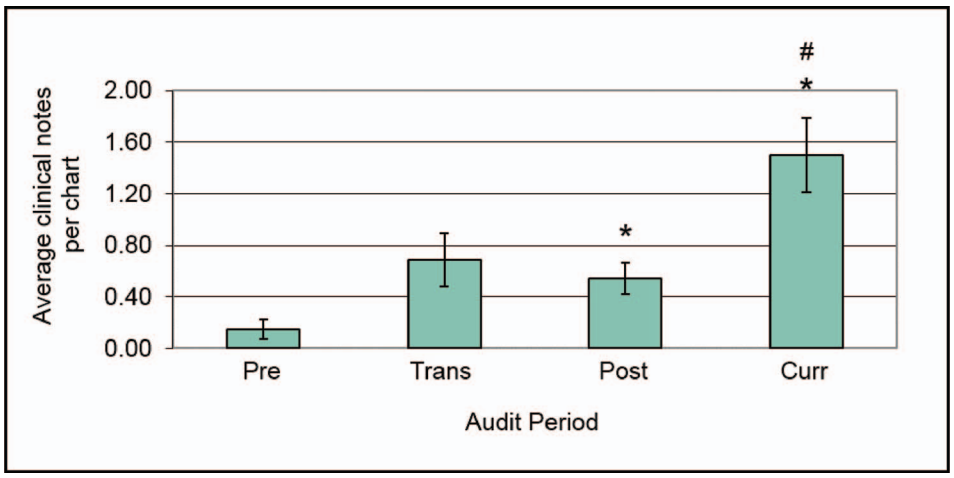

FIGURE 1: **Pharmacists' average clinical notes per chart reviewed in each audit period. Pre=Pre-implementation period, Trans=Transitional period, Post=Post-implementation period, Curr=Current period, *p < 0.01 compared to pre-implementation period, #p < 0.01 compared to post-implementation period**

an 11-fold increase from the preimplementation period to the current period (from 0.002 to 0.023); the differences between periods were statistically significant between the preimplementation and all the other periods ($P = .03$, $P = .02$, and $P < 0.01$ for the transitional, postimplementation, and current periods, respectively). No other statistically significant differences between the four periods audited were found for the long-term group of patients. In the short-term group of patients, there was also a consistent increase in the documentation rate throughout all of the periods audited (from 0.007 in the preimplementation period to 0.058 in the current period), although the difference was only statistically significant when comparing the preimplementation to the current periods ($P < .01$) or the transitional to the current periods ($P = .02$). These results are illustrated in Figure 2. The rates of order clarifications were generally consistent through all periods, and there was no statistical significant difference between the average rates for any of the patient groups or when comparing between periods.

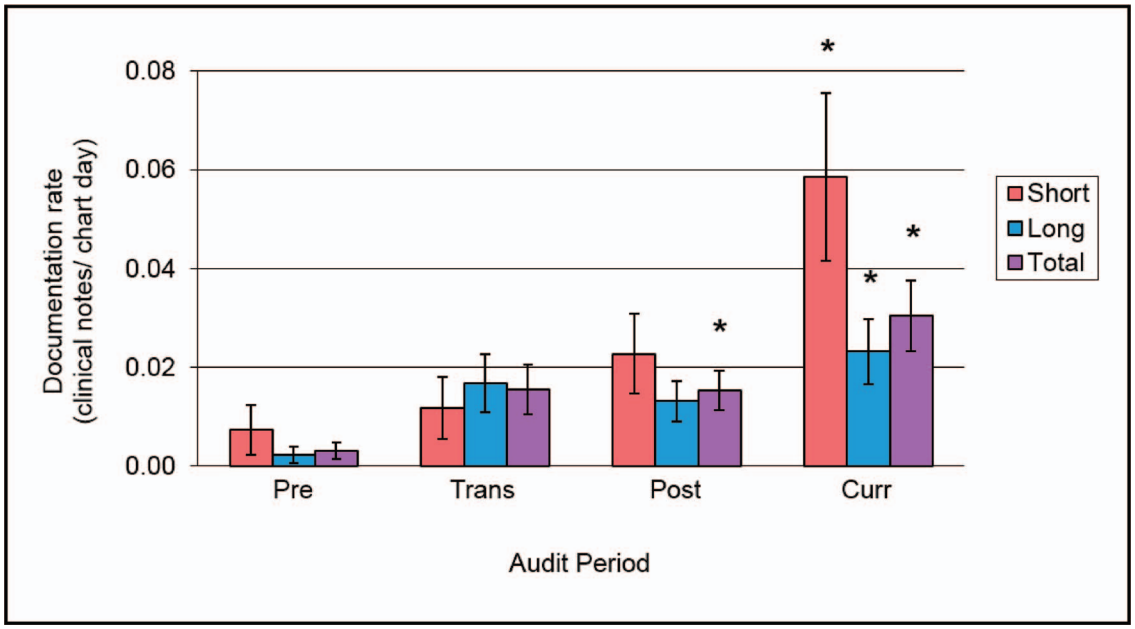

FIGURE 2: **Documentation rate in patients with short and long lengths of stay. Pre=Pre-implementation period, Trans=Transitional period, Post=Post-implementation period, Curr=Current period, *ast;p < 0.01 compared to pre-implementation period, Short=Documentation rate for patients with short lengths of stay, Long=Documentation rate for patients with long lengths of stay, Total=Documentation rate for all patients regardless of their length of stay**

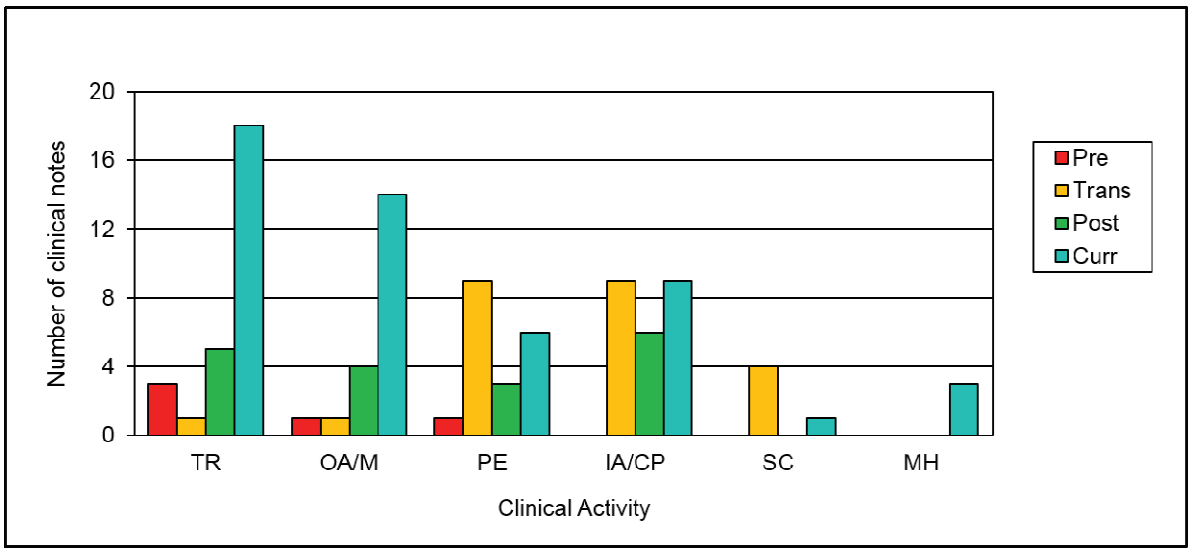

FIGURE 3: Types of pharmacists' clinical notes for each study period. Legend: TR=Treatment Recommendation, OA/M=Ongoing Assesment and Medication Monitoring, PE=Patient Education, IA/CP=Initial Assessment and Formulation on Care Plan, SC=Seamless Care, MH=Medication History

The types of pharmacists' documentation notes for each study period are illustrated in Figure 3. In comparison to the preimplementation period, documentation of core clinical activities, particularly initial assessment and formulation on the care plan, treatment recommendation, and ongoing assessment and medication monitoring, had the most notable growth between the preimplementation and current periods.

Discussion

By auditing the documentation of pharmacists' activities in the patients' medical charts before and after the implementation of a redesigned clinical practice model in a psychiatric setting, we observed an overall increased pharmacist documentation rate over the four time periods studied and an increased proportion of documentation of proactive clinical activities. The documentation of activities resulting from pharmacists' reactive or consultative services consistently decreased from 78% in the preimplementation period to 32% in the current period.

In addition, compared with the preimplementation period, documentation of core clinical activities, particularly initial assessments/formulation of care plans, treatment recommendations, and ongoing assessment/drug therapy monitoring, had the most notable growth between the preimplementation and the current periods. These results support findings in other settings that pharmacists in direct patient care roles are better positioned and better equipped for the provision of evidence-based clinical pharmacy services.[8,10–14]

Documentation of core clinical activities for short-term and long-term patients also increased, which suggests that the provision of clinical pharmacy services for all patients, regardless of their acuity, improved after implementation of the new model. It appears that both, the integration of pharmacists within the acute psychiatry multidisciplinary care team and the availability of the clinical float pharmacist in nonacute units allowed for the provision of more proactive and consistent clinical pharmacy services. Other researchers have described similar findings and have reported that restructured clinical pharmacy services at their institutions had a positive impact on stakeholder satisfaction.[8,11,12]

The documentation rates observed in the current period also suggest that the practice of evidence-based clinical pharmacy has been sustainable over time. Several factors may have contributed to the success and sustainability of the results obtained from restructuring the clinical pharmacy program in our hospital. Perhaps the most important one is that pharmacists embraced the challenge and worked with the clinical leadership to develop the skills necessary for the provision of proactive, direct patient care, such as patient interviewing and assessment skills, as well as instituting clinical documentation strategies. Also, in presenting the proposed changes to the hospital staff, we highlighted the benefits of the redesigned clinical practice model as supported by the available evidence, including the provision of quality care to a smaller group of patients and the benefits of pharmacists being integrated into the multidisciplinary care team without compromising the reactive clinical pharmacy services that were already being provided.[2–4,11,15,16]

This project has several limitations, including potential pharmacists' documentation bias and the retrospective nature of the audits. It is also possible that not all interventions performed by clinical pharmacists were captured in the retrospective review of the patients' medical charts. In addition, this project did not measure a clinical outcome directly; rather, it was assumed that patients received improved care as a result of more direct patient care provided by pharmacists.

Conclusion

The results obtained from the four documentation audits suggest the redesigned clinical practice model enabled a successful transition of the pharmacists' role from being predominantly reactive to becoming more proactive and integrated, as evidenced by an increase in the documentation of pharmacists' core clinical activities after its implementation.

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