Optimizing Resident Physician Use of Clinical Pharmacy Services

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BACKGROUND AND OBJECTIVES: Clinical pharmacists provide pharmacy services in family medicine residency programs across the nation. Currently, clinical pharmacy services are not optimally used by most residents. The objective of this study was to design strategies to educate family medicine resident physicians on optimal use of clinical pharmacy services.

METHODS: Between April 2009 and May 2010, surveys and focus groups were conducted to develop educational strategies tailored to physician residents’ needs. Strategies included visual reminders and one-on-one time between pharmacists and residents. Data on pharmacy services use was collected before and after implementing the educational strategies and analyzed to assess the effectiveness of the strategies.

RESULTS: Clinical pharmacy services use by resident physicians increased after the intervention (51.5% to 57.2%). Reasons providers used pharmacy services changed after the intervention, with increases in drug information (66.2% to 69.4%) and patient education services (2.5% to 7.2%) and a decrease in patient care services (31.2% to 23.3%). Pharmacists saw fewer uncomplicated patients (59.1% to 53.9%) and more complicated patients (19.7% to 38.5%) after the intervention.

CONCLUSIONS: Educating resident physicians on optimal use of pharmacy services required clarification of the pharmacist’s role on the care team and in the educational process. The educational strategies defined the pharmacist role to include that of a preceptor and not just patient care provider, a distinction that is congruent with the medical teaching model. These strategies could be applied at other training sites to optimize use of clinical pharmacy services in physician residency training programs.

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Models for educating residents on the use of clinical pharmacy services is lacking in the literature. Some resources describe methods to train residents to provide pharmacy services themselves instead of using pharmacists. However, these do not address the unique barriers at a residency training site.

The objective of this study was to design educational strategies for residents on optimal use of clinical pharmacy services. This would be a potentially replicable strategy at other FMRPs.

Methods

This prospective study occurred from April 2009 to May 2010 at Broadway Family Medicine (BFM), a 10/10/10 FMRP at the University of Minnesota. The clinic averages 600 patient encounters a week, and pharmacy services accounts for approximately 20 patient encounters a week. Pharmacists are available daily (shared between two faculty pharmacists and one resident funded primarily by the College of Pharmacy, University of Minnesota), working under a collaborative practice agreement and mainly accessed through physician...
referral. Pharmacy services are billed using Medication Therapy Management (MTM) codes (Table 1). The study was not designed to evaluate the cost of pharmacy services and subsequent billing changes.

The Peters Institute of Pharmaceutical Care Research Program at the University of Minnesota supplied grant funding for this project. The University of Minnesota Institutional Review Board Human Subjects Committee approved the project.

**Clinical Pharmacy Use in April 2009**

Preliminary data were collected for 4 weeks in April 2009. The primary measure was resident use of clinical pharmacy services. Secondary measures included reasons for referral, encounters resulting in the pharmacist seeing the patient, and the level of service as measured by MTM codes.

**Strategy to Increase Clinical Pharmacy Use**

Strategies were developed based on data collection from a pharmacist practitioner survey, a resident survey, and resident focus groups. New strategies were piloted to residents from August 2009 to April 2010.

Pharmacists worked with each resident for one half day (4 hours) in clinic, a total of 120 hours. The pharmacist made patient-specific recommendations on drug-related needs and billed for patients when seen. The pharmacists shared their approach to medication management, types of patients that could benefit from pharmacy services, and services currently offered.

An announcement board was placed in front of the precepting table. Topics, rotated every 3 weeks, included how to refer patients to pharmacy services, methods pharmacists use to evaluate patients' medications, opportunities for collaboration, and details on the services pharmacists provide.

**Clinical Pharmacy Use in May 2010**

The effectiveness of the strategies was evaluated for 4 weeks using the same data collection methods. Evaluations occurred at the same time of year to ensure residents were at the same level of training.

**Statistical Analysis**

Fisher's exact test was used to compare the percentages of encounters with residents, percentages of patient visits, and reasons for encounters before and after the intervention. For MTM coded encounters, the percent of each level of service was compared. The coded encounters were grouped into uncomplicated patient visits (level of service 1 or 2) and complicated patient visits (level of service 4 and 5) and compared using the Fisher's exact test. P value of <.05 was considered statistically significant. All the analyses were performed using SAS software, version 9 (SAS Institute Inc, Cary, NC).

**Results**

The percentage of clinical pharmacy services that were used by residents increased, although not statistically significant (Table 2). The reasons for use changed after implementation of the strategies; patient care encounters decreased while drug information and patient education increased (Table 2). The change for why providers used clinical pharmacy services was statistically significant. There was a change trending toward statistical significance in the level of service using MTM codes, with low levels (1 and 2) for uncomplicated patient visits decreasing and high levels (4 and 5) for complicated visits increasing (Table 3).

**Discussion**

After implementation of the strategies, pharmacy services were used more for drug information, patient education, and direct patient care for complex medication problems. The key change was that the pharmacist role was defined as that of preceptor and not just patient care provider, consistent with the medical teaching model. This shift from

<table>
<thead>
<tr>
<th>Level</th>
<th>Assessment of Drug-Related Needs</th>
<th>Identification of Drug Therapy Problems</th>
<th>Complexity of Care Planning and Follow-Up Evaluation</th>
<th>Approximate Face-to-Face Time (Minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Problem focused—at least one medication</td>
<td>Problem focused—0 drug therapy problems</td>
<td>Straightforward—one medical condition</td>
<td>15</td>
</tr>
<tr>
<td>2</td>
<td>Expanded problem—at least two medications</td>
<td>Expanded problem—at least one drug therapy problem</td>
<td>Straightforward—one medical condition</td>
<td>16–30</td>
</tr>
<tr>
<td>3</td>
<td>Detailed—at least three to five medications</td>
<td>Detailed—at least two drug therapy problems</td>
<td>Low complexity—at least two medical conditions</td>
<td>31–45</td>
</tr>
<tr>
<td>4</td>
<td>Expanded detailed—at least six to eight medications</td>
<td>Expanded detailed—at least three drug therapy problems</td>
<td>Moderate complexity—at least three medical conditions</td>
<td>46–60</td>
</tr>
<tr>
<td>5</td>
<td>Comprehensive—at least four medications</td>
<td>Comprehensive—at least four drug therapy problems</td>
<td>High complexity—at least four medical conditions</td>
<td>60+</td>
</tr>
</tbody>
</table>
patient care provider to preceptor is shown by differences in the reasons that residents used clinical pharmacy services (Table 2), the number of encounters resulting in pharmacists seeing patients (Table 2), and differences in MTM coding for patient visits before and after the educational strategy (Table 3).

After the strategies, pharmacist direct patient encounters decreased (Table 2). However, pharmacists were seeing more complicated patients (Table 3). Instead of “taking over” care for uncomplicated patients and possibly impinging on resident learning, pharmacists served as a resource in precepting to enhance resident education and improve patient care. Currently, pharmacists designate time to precepting residents in addition to providing direct patient care. These strategies could be applied to other FMRPs to optimize use of clinical pharmacy services.

Changes occurring during the study may have affected the results. During the study, two faculty left the program and four faculty joined the program. This change may have influenced the noted differences in pharmacy services use. Pharmacist availability also changed between the collection periods. In May 2010, pharmacists were available for a day less than in April 2009. This may have contributed to the decrease in pharmacy services use (Table 2).

The lack of published literature on educating residents to use clinical pharmacy services points to the need for future research on this topic. Further research is needed to assess attitudes and barriers to co-management of patients and team-building in continuity practice.

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References