Establishing clinical pharmacy services in a Pakistani intensive care unit

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Clinical pharmacy is a well-established discipline of pharmacy practice in the West. Many reports in the medical literature document interventions by pharmacists in clinical settings. By comparison, clinical pharmacy in Pakistan is not well established. The bachelor of pharmacy degree is the only pharmacy degree offered by Pakistani universities, and only 10 professional universities offer it. A majority of pharmacy graduates prefer careers in the pharmaceutical industry, with less than 10% pursuing careers in hospital settings. Hospital pharmacy practice in Pakistan is usually restricted to dispensing, and clinical pharmacy services are rarely provided. Pharmacist participation on a multidisciplinary health care team is an entirely new concept to practicing pharmacists in Pakistan.

The Aga Khan University Hospital is the only tertiary care facility with a computerized physician order-entry system where pharmacists review every prescription before dispensing. Although there are no pharmacy residency programs in Pakistan, our hospital offers a 12-month on-the-job training program for all pharmacists. To increase our clinical services, we created a position for an intensive care unit (ICU) pharmacist. The pharmacist who filled this position went through a 12-month training program in our department and was required to review the Pharmacotherapy Series (consisting of five modules) of the American Society of Health-System Pharmacists’ Clinical Skills Program.

The ICU pharmacist’s role. The ICU pharmacist was a member of the ICU team, which included an attending anesthesiologist and two residents from the departments of anesthesiology and medicine. The ICU pharmacist was responsible for reviewing the medication profile of each patient for drug-related problems, including inappropriate dosages, adverse drug reactions, duplicate therapy, drug interactions, and so forth. The pharmacist also adjusted medication dosages in patients with renal insufficiency. After identifying a drug-related problem, the pharmacist informed the patient’s physician and made the appropriate recommendation. Our ICU is open to all departments, including family medicine, internal medicine, and surgery. Therefore, the pharmacist had to communicate his recommendations not only to the ICU team but also the patient’s primary care team.

He then documented the outcomes of all his recommendations in the physician order-entry system. Cost savings were calculated by subtracting the cost of therapy recommended by the ICU pharmacist from the cost of therapy prescribed by the physician. A senior pharmacist reviewed these interventions monthly and prepared a report that was presented to the pharmacy management review committee. A cost-benefit ratio was calculated on the basis of published methodology.

Pharmacist interventions and cost savings. The ICU pharmacist recommended 463 interventions between June 2000 and July 2001. Of the 463 recommendations, 424 (91.6%) were accepted. The most common types of recommendations involved inappropriate medications (170 recommendations [36.7%]), dosage adjustments in patients with...
renal impairment (127 [27.4%]), unnecessary medications (93 [20.1%]), inappropriate dosages (24 [5.2%]), inappropriate routes of administration (22 [4.8%]), inappropriate monitoring (16 [3.5%]), and drug interactions (11 [2.4%]). The estimated total saving from all interventions was $34,614, which resulted in a monthly cost saving of $2,472. Interventions related to inappropriate medications were associated with the highest cost saving ($13,423), followed by interventions related to adjustment of dosages for renal function ($8,420), unnecessary drugs ($6,915), drug interactions ($1,817), inappropriate dosages ($1,685), inappropriate routes of administration ($1,421), and inappropriate monitoring ($930). Eighty percent of the recommendations involved antimicrobials, while the rest involved histamine H₂-receptor antagonists and proton-pump inhibitors (7%), heparin (6%), antiepileptic medications (4%), cardiovascular agents (1%), and miscellaneous drugs (2%). Having a full-time pharmacist in the ICU cost $1,200 per year, resulting in a cost-benefit ratio of 1:25.

Our service did have some problems. The pharmacist who was appointed to the ICU was not a trained clinical pharmacist. Our ICU is an open ICU; therefore, the pharmacist had to communicate all of his recommendations to the primary care teams before he could document them in the medical records. Although time-consuming, this communication helped improve the perception of pharmacy by other healthcare professionals. A majority of our medical staff expressed appreciation for the pharmacist’s interventions. This approval led the pharmacy and therapeutics committee at our hospital to establish a policy allowing pharmacists to document their interventions in the medical records.

Expansion of services. We are expanding our clinical pharmacy services to other critical areas. We have hired an additional clinical pharmacist and have developed an inhouse training and education program for our pharmacists to improve their clinical skills. Six new positions for clinical pharmacists have been budgeted for 2002–03 to provide clinical pharmacy services in the neurology, general surgery, cardiology, oncology, and pediatrics areas.

Conclusion. A Pakistani hospital successfully established clinical pharmacy services in the ICU. The services appeared to result in higher-quality drug therapy and cost savings.

References