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**PHARMACY PRACTICE**


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## How Pharmaceutical Controls Worked in One Ontario Hospital

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### INTRODUCTION

1991 was a discovery year for the health sector in the province of Ontario. After years of threats that the Ministry of Health would no longer reimburse shortfalls of hospital budgets, the threat finally became absolute and hospitals were forced to look at the budget forecasts in the same rigid responsible manner as private enterprise.

The Ottawa General Hospital (OGH) was a 520-bed tertiary care teaching hospital at that time, affiliated with the University of Ottawa with teaching programs in all major medical specialties. Although the hospital had established endowment funds and a Foundation for research which provided independent income, 85% of the hospital's annual budget was still derived from the Ministry of Health. In October of 1991 when the Minister of Health announced the "hospital recovery plan" which was designed to ensure deficit control, OGH was forced to examine its financial forecast. It was then noted that if trends continued, the hospital would end up in a \$6,500,000 deficit. Action was required and senior management decided to canvass all departments to see what contributions they would make to either decrease expenses or increase revenues.

### Pharmacy at OGH

The Pharmacy Department at the OGH is a modern department offering state-of-the-art services such as unit-dose drug distribution (including Centralized Intravenous Additive Service-CIVA), clinical pharmacy services, and drug information services. In 1991, the department employed 67 FTEs (approximately equal number of technicians and pharmacists) and had an operations budget of approximately \$3,500,000. In addition, the hospital had a medication budget of \$9,000,000, including anesthetic gases, IV and dialysis solutions.

When the Vice-President, Professional Services and the Director of Pharmacy Service reviewed the options available to cut costs, the following items were considered:

- a) *Hours of operation:* The department reviewed these hours twice in the previous four years and no further cutbacks were deemed desirable in view of the number of items already being withdrawn from the Night Service;
- b) *Reduction in non-productive time:* According to several outside reviews and from the experience of all those involved, there was no readily identifiable "slack" in the

department;

- c) *Increases in technology/productivity:* The department was already committed to full computerization of the drug distribution system including the use of an automatic dispensing device;
- d) *Inventory cuts:* We already had an inventory turnover of 11 times per year, which is extraordinary for a pharmacy department;
- e) *Cuts in specific services:*
  - Drug Information: OGH houses a regional service and receives some benefit from its presence; indeed a strong drug information service is necessary for drug utilization review and documentation support to the Pharmacotherapeutics Committee;
  - Clinical Pharmacists: Services were already limited in surgical areas and there were numerous requests for more services; previous reviews had identified that most medical services regarded clinical pharmacists as "essential" on their teams. In addition, cuts in clinical pharmacist hours would diminish some of the cost control influence that was documented with such services.
  - Pharmacy Technicians: Cuts here would mean less unit-dose or CIVA service and

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therefore more work for nursing which was not desirable.

Secretarial/Clerical: This group was already felt to be overworked as there had been no increase in staffing in ten years despite a doubling of the departmental staff.

- f) *Supplies*: An independent review of all hospital purchased supplies suggested no significant value to cuts here;
- g) *Revenues*: Sales of publications and reimbursement for research involvement were already in high gear. The department was also collecting dispensing fees for outpatient dispensing of special drugs;
- h) *Drug Purchasing*: Recent efforts between Pharmacy and Purchasing had reviewed all contracts and the provincial group purchasing arrangement with some modest gains in the process; no further savings were foreseen;
- i) *Drugs*: The medication budget at OGH had for many years been under the auspices of Nursing for reasons which are largely historical. In early 1991, it was moved out of Nursing making this budget more plainly the responsibility of the Pharmacy Department in conjunction with the Pharmacotherapeutics Committee.

Therefore, the planned approach was to examine the potential to better control the rapidly expanding drug budget. Indeed the drug budget was an easier target in that it was almost three times the operations budget, thereby offering more potential savings.

### Medication Budgets

Drug expenditures in Canada have grown rapidly over the last decade.<sup>1</sup> The rate of growth of the pharmaceutical industry has exceeded that of most others. Drug

costs at our hospital were increasing at an average rate of 12% per year, which if taken to its extreme, would have meant that our drug budget would rise to \$25,000,000 by the turn of the century. Drug budgets were not increasing because of inflationary increases, but rather because of new drugs on the market, usually more expensive than older agents, and some new agents which had no predecessors and broadened the pharmacotherapy spectrum. Moreover, recent developments in drug research had yielded agents which were bio-engineered and were extremely expensive (e.g., the colony growth factors).

### METHODS

After one month of study of the potential to significantly reduce the medication budget, including discussion with some key members of the medical staff, the following ten-point program was put forward by the Pharmacy Department.

#### A) Drug Utilization Evaluation (DUE)

- The literature and our own experience resound with cost savings engendered by DUE, which are vigorously followed up with policy or procedural changes. At OGH, we found ourselves in a particularly challenging spot; previous studies had been performed by pharmacy residents and no staff hours could be identified for such activity. Past efforts to convince senior administration to invest in such activities had failed. We decided to raise funds for such activities by conducting seminars on Antibiotic Management. Further, we found that a trained pharmacy technician (rather than pharmacist) could perform the data collection tasks quite capably.

**B) Antimicrobial Protocols** - When the dilemma of budget control was presented to the Subcommittee on

Antibiotics and Cytokines, they very quickly picked up the cause. On reviewing the annual usage figures for anti-infectives, it was decided to develop "Criteria for Use" for the six most costly of these in our budget: acyclovir, ceftazidime, clindamycin, imipenem, liposomal amphotericin B, and vancomycin. Through the combined efforts of the Infectious Diseases Service and the Pharmacy, attempts were made to restrict the use of these agents to a series of approved protocols. Follow-up would be done by drug utilization review, or minimally review of usage figures. The success of the initial effort led to "Criteria for Use" for a variety of other agents including: colfosceril, flumazenil, parenteral ketorolac, sumatriptan, G-CSF, and ciprofloxacin.

**C) IV → po Conversion** - After a review of the budgetary implications of converting from IV to oral forms of several drugs, ten agents were chosen and a procedure was approved through the Pharmacotherapeutics Committee and the Medical Advisory Committee (MAC) whereby pharmacists could initiate such conversions. These IV agents were: cefuroxime, ciprofloxacin, co-trimoxazole, erythromycin, fluconazole, metronidazole, ranitidine, and three corticosteroids (dexamethasone, hydrocortisone and methylprednisolone).

#### D) Dosage Interval Extension

- Following a literature review and gleaned experience from other hospitals, a list of seven agents was prepared and approved whereby pharmacists would automatically extend the dosing interval in most circumstances. The agents (and standardized interval) were: cefotaxime (q8h), ceftazidime (q8h), ceftizoxime (q12h), clindamycin (q8h), metronidazole (q8h), piperacillin (q6h), and vancomycin (q12h).

**E) Antibiotic Duration Limit**

- Working with the Subcommittee on Antibiotics and Cytokines and the Department of Surgery, a 24-hour limit on prophylactic antibiotic use was agreed upon.

**F) Regional Formulary and Drug Use Evaluation program**

- Another opportunity was the arrival of the Regional Formulary and Drug Use Evaluation program. This program, specially funded by the Ontario Ministry of Health's Hospital Incentive Fund, was coordinated out of our hospital, and our hospital was a participant.

**G) Drugs in Anesthesia**

- Working with the anesthetist member of the Pharmacotherapeutics Committee, a program was instituted to reduce and/or improve the use of expensive agents and through an education program, offer alternatives. Targeted agents included propofol, midazolam, naloxone, and the newer skeletal muscle relaxants.

**H) Drug Trials**

- Although the hospital is heavily involved in many drug trials, special efforts were made to facilitate participation in studies which provided cost avoidance for expensive agents on the Formulary. Participation included thrombolytic and antibiotic trials where the drugs would be provided at no charge.

**I) Drug Cost Awareness Program**

- From the beginning it was appreciated that both clinical pharmacists and physicians were not often aware of specific drug prices nor of their alternatives. The Drug Consultation Services of the Pharmacy prepared a Cost Awareness Handbook on commonly used and/or expensive drugs with their alternatives; this handbook was provided to all pharmacists and to members of the intern and resident staff.

**J) Formulary Control**

- With particularly strong support from the Medical Advisory Committee, the Pharmacotherapeutics Committee and the Pharmacy Department were able to minimize the use of new non-formulary agents by invoking a complex procedure to obtain such agents. Since new drugs are the principal reason for rising drug budgets, this policy was expected to break the escalating trend with new drugs.

In addition, new drugs requested for addition to formulary were reviewed through a cost-benefit-oriented analysis. Agents which were anticipated to significantly increase the drug budget were required to demonstrate significant benefit over present therapies. As such, agents expected to cost the hospital more than \$10,000 per year were reviewed by a new Executive Subcommittee of the Pharmacotherapeutics Committee, composed of the Chair of the main committee, the secretary (director of pharmacy), administrator, and the assistant director of pharmacy for Drug Consultations Services; the committee sought considerable consultation from the University's Health Economics Unit. This subcommittee evaluated pharmacoeconomic information on these agents before providing a recommendation to the MAC.

For some agents (e.g., G-CSF), a "capping" method was initiated wherein a maximum annual drug expenditure was allowed for certain specific conditions. Such capping was deemed controllable for drugs where only one or two medical services were involved with their prescribing.

Overall, it was forecast that over 18 months, the hospital could save \$500,000.

**RESULTS**

Extensive education of the pharmacists was provided during the early phase of this project. Emphasis was placed on enforcing the "Criteria for Use" by offering alternatives or by providing the scientific or cost basis for the policy. Analyses were performed every six months during the 18-month project. Some of the programs were initiated as quickly as policy was presented to the Pharmacotherapeutics Committee and the Medical Advisory Committee. Others were developed after more extensive review of the literature or drug utilization data.

The results of the cost containment program are shown in Table I. Costs were assessed by following drug purchase or usage costs for the specific drugs targeted by the program. The predicted savings were for an 18-month period,

**Table I. Breakdown of Individual Programs Influence on Drug Budget Savings**

	Predicted Savings	Actual Savings
A. Drug Utilization Review	\$ 100,000	\$ 50,000
B. Antimicrobial Protocols	200,000	344,000
C. IV → po Conversion	50,000	50,000
D. Dosage Interval Extension	25,000	23,000
E. Antibiotic Duration Limits	25,000	20,000
F. Regional Formulary/D.U.R.	25,000	3,000
G. Drugs in Anaesthesia	25,000	60,000
H. Drug Trials	30,000	32,000
I. Cost Awareness Program	20,000	unable to assess
J. Formulary Control	zero growth	zero growth
<b>TOTAL</b>	<b>\$ 500,000</b> (over 18 months)	<b>\$ 582,000</b> (over 12 months)

whereas the actual savings were over 12 months. Drugs in two programs were only calculated once.

At one year, the actual savings had already reached almost \$600,000, and the 18-month goal had been surpassed. More particularly, the estimated '92-93 drug budget of \$9,032,770 was reduced to an actual amount of \$8,337,750. At the end of the 18 months, an estimated \$ 738,000 in cost savings had been achieved. Overall, the drug budget showed no further growth. The success was heralded by senior medical and administrative staff and along with other programs allowed the hospital to avoid a deficit during this period.

## DISCUSSION

Some programs were more successful than others. For example, there was still room for improvement with the IV → po conversion program. This program required the most work by the clinical pharmacist staff in that an evaluation of the feasibility and desirability of oral dosing was always required. For most drugs which had "Criteria for Use" protocols, the program was a great success; yet for several, a drug utilization review was required to identify where the drug was being used outside the criteria in order to direct education programs at these uses.

Perhaps the most disappointing experience was in trying to develop a model for pharmacoeconomic analysis which would allow us to prioritize our decisions. It became apparent that there are few good pharmacoeconomic studies available for new drugs. Moreover, in those cases where such data are available, standardization of methodology is limited, making it difficult to compare "apples and oranges". The hospital had no capacity in resources or time

to develop its own studies or analyses. New drugs which might lead to economies to the health care system but not to the hospital itself (e.g., by decreasing length of stay) create a confusing ethical versus budget balancing exercise. There is also the time pressure factor, namely the usual desire to take advantage of a new agent if it truly offers advantages. This is obviously an effort which lends itself to regional, provincial or national efforts which are not as yet available. Consequently, we often abbreviated the analysis to hospital economies (e.g., saved antibiotic and TPN costs associated with use of a growth factor).

The future remains even more challenging. Because the most obvious cost savings have been achieved, it will be very difficult to attain further cost savings. Efforts will be initiated in the areas of total parenteral nutrition and cancer chemotherapy. Moreover, it will take the on-going efforts of medical and pharmacy staff just to maintain the success of the implemented programs, that is, to maintain the cost avoidance already achieved.

The hospital is well advanced in data collection for the case costing analysis being coordinated by the provincial Ministry of Health. This will allow prescribing groups to examine their particular prescribing habits and compare them with other institutions. This should lead to efforts to control above average drug costs.

Several other observations are noteworthy. Clearly there has been a decrease in individual physician autonomy in prescribing. Moreover, a certain level of bureaucracy seems to be tolerated; but it is based on respect for the alternatives presented and their source (e.g., the antimicrobial Criteria for

Use supported by the Infectious Diseases Service). Cost orientation has become a higher priority in prescribing and is an acceptable consideration as evidenced by its frequent discussion at medical rounds. Finally, it is the opinion of all involved that patient care has not been sacrificed and indeed may be improved by the avoidance of risks and the greater use of drugs of choice as set out in the protocols.

In conclusion, it has been the experience of the Ottawa General Hospital that through the concerted and cooperative efforts of medical staff, senior administration, the Medical Advisory Committee, the Pharmacotherapeutics Committee and especially its Subcommittee on Antibiotics and Cytokines together with the vigilant work of the pharmacists, major drug budget reductions can be achieved at the level of 5 to 10 percent. It is agreed that patient care has not been altered and perhaps improved. ☒

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## RECOMMENDED REFERENCES

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