Comprehensive Clinical Pharmacy Documentation in an Out-Patient Cancer Facility

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ABSTRACT

Clinical pharmacy activities that affect patient outcome are a high priority in pharmacy practice. A relatively simple method of documentation for analysis of these clinical pharmacy activities in an out-patient oncology setting is described.

Policies and procedures for clinical pharmacy activities were developed and formalized in an effort to standardize pharmaceutical care in the cancer facility. Consultations or drug information questions originating outside the pharmacy, as well as interventions initiated by a pharmacist were all documented on a comprehensive activity form on a daily basis by each pharmacist. All medication counselling sessions by a pharmacist were also recorded. During a 12 month study period, a total of 1828 activities were recorded. Of these, 343 (18.8%) were pharmacist-initiated interventions to drug therapy. Recommendations were accepted by physicians in 293 (85.4%) of these interventions. In 125 (36.4%) cases, potentially serious negative patient outcomes were avoided by this clinical pharmacy activity.

Key Words: *clinical pharmacy, documentation, interventions, oncology, outpatients, workload*

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RÉSUMÉ

Les activités de pharmacie clinique susceptibles d'avoir une incidence sur l'issue de la maladie occupent une place déterminante dans la pratique de la pharmacie. Suit la description d'une méthode relativement simple permettant de documenter et d'analyser ces activités dans un service de consultation externe en oncologie.

On a élaboré et adopté des politiques et des procédures sur les activités de pharmacie clinique en vue d'uniformiser les soins pharmaceutiques à la clinique d'oncologie. Tous les jours, chaque pharmacien notait les consultations et les demandes de renseignement sur les médicaments émanant de l'extérieur, de même qu'il décrivait ses propres interventions au moyen d'un formulaire très détaillé. On a également enregistré toutes les séances d'information sur les médicaments données par les pharmaciens. Au terme de la période expérimentale de douze mois, 1 828 activités avaient été consignées. Sur ce nombre, 343 (18 %) concernaient des interventions du pharmacien sur le traitement. Les médecins ont accepté les recommandations du pharmacien dans 293 cas (85,4 %). Dans 125 de ces cas (36,4 %), ces interventions cliniques ont épargné aux malades des effets secondaires potentiellement graves.

Mots clés: *charge de travail, documentation, interventions, oncologie, malades de consultation externe, pharmacie clinique*

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INTRODUCTION

Cost-effectiveness resulting from the application of clinical pharmacy services and the impact of these services on patient care in hospitals has been well documented.[1-17] Many reports describe manual and computer systems for documenting these clinical pharmacy activities and workload in hospital pharmacies.[1-2,5-7,9-13,17-25] The importance of documenting these clinical activities of pharmacists has also been described.[1-13,16-23] However, implementation and advancement of clinical pharmacy services have been primarily inpatient oriented. In an era of rising hospital costs, fiscal restraints, and the aging population, pharmaceutical services in ambulatory care settings must keep pace clinically.

An out-patient oncology facility has been shown to offer unique opportunities for clinical pharmacy practice.[15] A system of processing and documenting clinical pharmacy services, activities, and a statistical analysis quantifying clinical pharmacy in an ambulatory care oncology facility however, has not been described.

The Tom Baker Cancer Centre (TBCC) is an outpatient oncology facility utilizing the primary nursing care model. Located adjacent to the Foothills Hospital in Calgary, Alberta, it has a volume of approximately 22,000 outpatient visits per year. The pharmacy department provides a complete intravenous (IV) admixture service for chemotherapy, as well as individual prescription drug distribution, and wardstock. The department is staffed by a manager, six full-time equivalent (FTE) pharmacists, 5.6 FTE technicians, and 0.5 FTE clerical personnel. The clinic is open Monday through Friday, 0800 hours to 1700 hours. The yearly prescription volume totals 35,000 and the number of IV admixture preprations is 15,000.

The TBCC pharmacy provides many specialized patient-oriented services. These include drug information, patient counselling, and drug order reviews. Additional activities include newsletter production, undergraduate teaching, participation in research, inservice education, attending patient care rounds, developing policies and procedures, and participation in various committees including the Pharmacy and Therapeutics Committee.

Throughout the 1980s the TBCC department of pharmacy progressed clinically, without fully capturing workload data for these patient-oriented services. The ultimate goal is to document all clinical services provided by the staff, to provide a comprehensive database for these services, to provide a system of peer review for quality assurance, and to increase the clinical profile of pharmacy in the TBCC.

METHOD

The pharmacist chart review process was developed and formalized by creating the procedure for Phar-

PHARMACIST CLINICAL ACTIVITY DOCUMENTATION FORM

Pharmacist _____ Month of _____

TYPE OF ACTIVITY:
1. CONSULTATION / DRUG INFORMATION:
   - A. Literature search / journal club
   - B. Dosing / administration
   - C. Pharmacology
   - D. ADR (complete forms)
   - E. ADR follow up
   - F. Side effects
   - G. Trade name / generic equivalent
   - H. Drug identification
   - I. IV compatibility / stability
   - J. Alternate therapy
   - K. Investigational drug
   - L. Drug information files
   - M. Other (specify)

II. INTERVENTION:
   - A. Inappropriate order
     1. Drug
     2. Dose
     3. Route
     4. Interval
     5. Duration
     6. Protocol error
     7. Incompatibility
     8. Drug interaction
     9. Patient allergy
   - B. Clarification of order
     1. Incomplete
     2. Illegible
   - C. Clarification for patient
   - D. Non-formulary (document)
   - E. Transcription error
   - F. Other (specify)

DATE	AREA	SPOKE TO:	TYPE OF ACTIVITY	RECOMMENDATION Accepted	RECOMMENDATION Rejected	COMMENTS	TIME

PEER REVIEW Signature _____ Date _____

Figure 1

MONTH END STATISTICS — CLINICAL PHARMACY ACTIVITIES

Month of _____ 199 _____

A. Consultations / Interventions:
1. _____ Number of consultations (I)
2. _____ Number of interventions (II)
3. _____ Number of recommendations accepted
4. _____ Total number of activities
5. _____ Total time involved
6. _____ Average time involved

B. Medication counselling:
1. _____ Number of patients counselled
2. _____ Verbal / telephone counselling
3. _____ Printed material distributed
4. _____ Total time involved*

Totals are taken from the medication counselling sheets (counted daily)

* Each counselling session is given 7.35 minutes.

Total time = _____ x 7.35 minutes.

TOTAL CLINICAL PHARMACY ACTIVITIES _____ HOURS (A & B)

Figure 2

macy Review of Drug Orders (PRODO) (Appendix A). A system for reporting clinical activities was also established. A simple form to record and collect data was developed, tested, and revised through five drafts during the years 1982-1990 (Figure 1). A coding sequence was implemented to quickly summarize pharmacist clinical activities and to track the time spent. The form divided clinical activities into two main categories: 1. Drug Information or Consultations, and 2. Therapeutic Interventions, or activities initiated by a pharmacist, arising from the PRODO. All of these activities performed were documented by each pharmacist using the form.

At the end of each month, a pharmacist reviewed and evaluated these entries and collated the information for statistics and workload (Figure 2). Information was extracted to identify problem areas and analyze trends. These were provided to the pharmacy manager to be addressed through channels such as the Pharmacy and Therapeutics Committee if necessary. The information was often shared with other oncology pharmacists at staff meetings.

Medication counselling was given to each patient when a new drug was dispensed. This activity was documented on the back of the original prescription as well as in the multidisciplinary notes of the patient chart. These statistics were gathered daily and added to the total of clinical activities at month end (Figure 2). A review of the documentation for a twelve month period July 1, 1990 to June 30, 1991 was completed to determine the extent and impact of the clinical activities.

RESULTS

The data from the 12 month review is summarized in Table I. The details of the consultations received by the department are presented in Table II while Table III summarizes pharmacist-initiated interventions. For the year reviewed, the average time spent on a consultation or drug information activity was 12.8 minutes. Pharmacist interventions required an average of 10 minutes. Of the 246 drug information consults solicited, 106 (43%) were initiated by patients, the remainder being from various health care professionals.

A total of 343 pharmacist interventions were documented in the 12 month study period. Of these, 85.4% were accepted. An intervention was considered to have been accepted by a prescriber if the action resulted in any change,

Table I: Clinical Pharmacy Activities, July 1, 1990 to June 30, 1991

	Total	Monthly Mean
A. CONSULTATIONS/INTERVENTIONS		
1. Number of consultations (drug information requests)	246	20.5
2. a) Number of interventions (pharmacist initiated)	343	28.59
b) Number of recommendations accepted*	293	24.42
B. MEDICATION COUNSELLING		
1. Number of patients counselled	1239	103.25
2. Verbal/telephone counselling	1149	95.75
3. Printed material distributed	1189	99.08
C. PRESCRIPTION VOLUME		
Prescription Volume	34796	2868.75

* resulting in any change to drug orders

Table II: Summary of Consultations received, July 1, 1990 - June 30, 1991

Category	#	%	Average Time (min.)	Total Time (min.)
A. Literature Search/Journal Club	9	3.7	38.1	343
B. Dosing/Administration	40	16.3	8.1	324
C. Pharmacology	7	2.8	19.3	135
D. ADR	3	1.2	5.0	15
E. ADR follow up	3	1.2	16.6	50
F. Side effects	47	19.1	9.8	460
G. Trade name/generic equivalent	13	5.3	6.1	79
H. Drug identification	12	4.9	7.6	91
I. IV compatibility/stability	11	4.5	11.2	123
J. Alternate therapy	10	4.1	6.9	69
K. Investigation drug	6	2.4	12.0	72
L. Drug information files	9	3.6	57.2	515
M. Other	76	30.9	11.4	865
Totals	246	100.0	12.8	3141

Table III: Summary of Pharmacist Interventions, July 1, 1990 - June 30, 1991

Category	#	%	Accepted	Rejected	Total Time (Min.)	Ave. Time (Min.)
A. Inappropriate order						
1. Drug	9	2.62	8	1	95	10.56
2. Dose	71	20.70	57	14	682	9.34
3. Route	3	0.9	3	0	15	5.00
4. Interval	24	7.00	24	0	211	8.79
5. Duration	12	3.50	11	1	103	11.69
6. Protocol Error	46	13.41	30	16	598	12.46
7. Incompatibility	0	—	—	—	—	—
8. Drug Interaction	0	—	—	—	—	—
9. Patient Allergy	0	—	—	—	—	—
B. Clarification of order						
1. Incomplete	67	19.53	58	9	529	7.56
2. Illegible	5	1.46	5	0	22	4.4
C. Clarification for patient	29	8.45	26	3	284	9.47
D. Non formulary	25	7.30	25	0	191	7.35
E. Transcription error	4	1.20	4	0	93	23.25
F. Other	48	14.00	42	6	537	10.74
Total	343	100.0	293	50	3360	10.0

addition or deletion to the drug order in question, and not necessarily identical to the recommendation made. The 14.6% rejection rate actually includes a large 'false negative' component, since rejections were usually a verification by the pharmacist of an intended change from previous therapy or a deviation from a usual protocol. Information received through the intervention was documented in the clinical activity documentation form, and in the chart if necessary for physician, nurse or pharmacist reference in further therapy.

The most common interventions were for changes in dose (20.7%) and incomplete orders (19.5%). At least 36.4% of the clinical interventions initiated by pharmacists prevented potentially serious side effects, adverse effects or inadequate therapy. (e.g., leucovorin rescue omitted from a high dose methotrexate order; levamisole not ordered when required in a colorectal cancer protocol; anti-emetic orders omitted from chemotherapy orders; cyclophosphamide 1600 mg orally was written instead of IV). Infrequently, a pharmacist requested a dosage adjustment to obtain significant cost savings. For example, a bleomycin dose of 16 units could be reduced to 15 units (package size) with a savings of about $170.00.

Our results indicated that 343 out of 35,000 or approximately 9.8 per 1000 medication orders at the TBCC required communication by a pharmacist with the ordering physician. Of these, 124 or 3.5 per 1,000 were judged as potentially serious prescribing errors. A recent study conducted by a hospital pharmacist in a 640-bed teaching hospital reported an overall error rate of 3.13 per 1000.[14] The pharmacist interventions originated from orders written by 51 different physicians practicing in the oncology area at the TBCC.

DISCUSSION

The establishment of a systematic, consistent and rational approach to pharmaceutical care has been suggested.[22,24] The intent of our program is affirmation of this approach with the ability to be both functional and practical on an ongoing basis. The procedure described has provided the department of pharmacy with an efficient means of illustrating the scope of most clinical activities. By consistently having access to patient data

through the chart, routinely implementing the PRODO, and documenting pharmacist interventions, the pharmacy department can identify suboptimal pharmacotherapy and its incidence. Interventions by pharmacists can be shown to significantly reduce the risk to patients from prescribing errors. The total number of clinical interventions and the high percentage of these accepted, the number of drug information requests, and the number of medication counselling sessions confirms the need and effectiveness of our clinical programs. Pharmacist impact on patient care and finances can be demonstrated.

A potential problem that has been identified is the need for consistent and reliable self-reporting of clinical activities by pharmacists.[1,9,19] Previous attempts in our department to document activities resulted in poor compliance and led to staff frustration. Discussions with staff indicated that the form and method described have been positively accepted, and that the actual documentation process is simple to perform and provides the necessary information.

However, the activities actually documented still represent a very small portion of total pharmacist hours and much of our clinical time is not documented. For example, time spent on investigational drug services and educational activities continues to increase.

Many authors suggest that the impetus for documentation is to justify to administration the need for pharmacy services, measure workload, predict staffing needs, show a decrease in expenditures, or defend and justify current programs.[2,3-5,10,12,19,20] The authors believe that documentation of clinical activities is as imperative as the documentation of dispensary and technical tasks. As professionals and members of the medical team, we believe that the documentation of our clinical activities lies in our role as clinical pharmacists.[1,2,4,6-9,11,13,17] We can measure workload, decrease expenditures, etc. but the information collected can also be used to educate pharmacy staff, increase awareness, provide new ideas for clinical practice, monitor prescribing patterns of physicians, provide reviews for the Pharmacy and Therapeutics Committee and act as an integrated quality assurance program.

In conclusion, the described documentation system is both a functional and efficient method for recording clinical activities which are indicative of the positive effect on drug therapy. By participating in the documentation process and striving to improve compliance in documentation, we can reinforce the credibility of our clinical programs and illustrate our contribution to health care. Annual summaries illustrate the degree of pharmacy involvement in patient care as opposed to the fiscal, inventory and technical tasks usually associated with the department. Data from pharmacist monitoring activities show a direct impact on patient outcome.

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Appendix A

Pharmacy Review of Drug Orders (PRODO)

1. The pharmacist reviews the medication profile for previous drug orders if any, and reviews the clinic chart for other pertinent information which may include:
   - i) diagnosis (site)
   - ii) patient demographics (age, height, weight, sex)
   - iii) treatment protocol to be followed
   - iv) participation in investigational drug or clinical trials
   - v) progress notes from physicians or multidisciplinary notes from nurses (for response to therapy, specific complaints, side effects)
   - vi) allergies
   - vii) recent hospitalization summaries
   - viii) new diagnosis
   - ix) treatment already initiated as an inpatient
   - x) laboratory, radiology, surgical reports (for significant findings regarding organ systems, toxicities)
   - xi) correspondence with other physicians, nurses, etc.
   - xii) previous or concurrent radiotherapy
   - xiii) past medical history and treatment
   - xiv) social history and support systems may be helpful in some instances (e.g., for patient counselling).
2. The pharmacist may enter into discussions with other health care providers or directly interview the patient for other necessary information.
3. With this information available, the pharmacist reviews the drug orders and evaluates the following:
   - i) therapeutic appropriateness, safety and efficacy of the drug regimen for the clinical indication
   - ii) appropriate route of administration, dosage, dosage form, schedule, method of administration and quantity
   - iii) therapeutic duplication in the drug regimen
   - iv) actual and potential drug-drug, drug-food, drug-lab data, and drug-disease interactions
   - v) drug allergies
   - vi) drug related side effects
   - vii) unwarranted or unintended changes in drug therapy from previous orders
   - viii) appropriate additional therapy for prevention of adverse effects of treatment (antiemetics, analgesics, chemoprotectants or rescue agents)
   - ix) degree of patient compliance with the prescribed drug regimen.
4. If the pharmacist detects any real or potential problem with the drug therapy upon review, communication with the physician is imperative.
5. Any changes made to therapy as a result of such an intervention shall be made in writing on the order and initialled by the physician or as a verbal order written as such by a pharmacist for the physician and followed by the pharmacist's signature.

   Other significant findings affecting future appropriate drug therapy should be communicated by the pharmacist on the medication profile or in the multi-disciplinary notes on the patient chart and signed by the pharmacist.