

Computer-Assisted Retrospective Clinical Activities Statistics (CARCAS) Program

Mark Donaldson, John Hope and Peter Jewesson

ABSTRACT

Clinical pharmacy services have been demonstrated to have a positive impact on patient care in the hospital setting. Accurate and complete documentation of interventions aimed at improving drug use is essential to assess workload characteristics, determine the impact of pharmacist activities, justify current programs and predict future clinical staffing requirements.

The need for an improved system of collecting and analyzing clinical workload statistics led to the development of a Computer-Assisted Retrospective Clinical Activities Statistics (CARCAS) Program in our department. Using a pre-defined clinical activity coding system, pharmacist activities were efficiently documented on a daily basis using an existing distributional computer system. Training requirements and data entry time were minimal. The CARCAS Program appeared to capture more clinical pharmacist activities than the earlier manual system.

The flexibility of the CARCAS Program should permit adaptation to other hospitals with similar computer systems regardless of the nature of their clinical programs.

Key Words: CARCAS, clinical, computer, workload statistics

RÉSUMÉ

On a démontré que les services de pharmacie clinique ont une incidence positive sur les soins prodigués aux malades, en milieu hospitalier. Il est essentiel de rassembler une documentation exacte et complète sur les interventions qui visent à améliorer la pharmacothérapie pour mieux établir les particularités de la charge de travail, préciser l'impact des activités du pharmacien, justifier les programmes existants et prévoir les besoins ultérieurs de dotation en clinique.

La recherche d'un meilleur système de collecte et d'analyse des données sur la charge de travail clinique a débouché sur la création d'un programme statistique d'analyse rétrospective des activités cliniques assistée par ordinateur (CARCAS — Computer-Assisted Retrospective Clinical Activities Statistics). Grâce à une codification des activités cliniques, on est parvenu à bien documenter les tâches quotidiennes du pharmacien avec le système informatisé de distribution déjà existant. L'utilisation du programme n'exige qu'une formation rudimentaire et il faut peu de temps pour entrer des données. Le programme CARCAS semble relever plus d'activités de pharmacie clinique que le système manuel antérieur.

La souplesse du programme devrait en permettre l'adaptation à d'autres hôpitaux dotés d'un système informatique similaire, quelle que soit la nature des programmes cliniques.
Mots clés: CARCAS, clinique, ordinateur, statistiques sur la charge de travail

Can J Hosp Pharm 1993;46:17-22

Mark Donaldson, B.Sc.(Pharm), is a member of the Department of Pharmacy, Vancouver General Hospital.

John Hope, B.Sc.(Pharm), is Director of the Department of Pharmacy, Burnaby Hospital.

Peter Jewesson, Ph.D.(Pharm. Sciences) is Director of the Department of Pharmacy, Vancouver General Hospital and Associate Professor, Faculty of Pharmaceutical Sciences, University of British Columbia and Clinical Instructor, Division of Infectious Diseases, Department of Medicine, Vancouver General Hospital.

Address correspondence to: Dr. Peter Jewesson, Vancouver General Hospital, Pharmacy Services, 855 West 12th Avenue, Vancouver, BC, V5Z 1M9.
Presented in poster form at the 1992 Professional Practice Conference, Canadian Society of Hospital Pharmacists, February 1992

INTRODUCTION

Clinical pharmacy services have been demonstrated to have a positive impact on patient care in the hospital setting.¹⁻⁶ Accurate and complete documentation of interventions aimed at improving drug use is essential to assess workload characteristics, determine the impact of pharmacist activities, justify current programs and predict

future clinical staffing requirements.⁷⁻¹¹

Manual documentation systems (e.g., maintaining daily written diaries) are typically used to document clinical activities.^{3,7-12} Limitations to these systems include inefficiency, poor pharmacist compliance and variability in data interpretation. This can be a particularly significant problem in large

centres with active clinical programs involving many pharmacists. To overcome this difficulty, some authors recommend the use of a computerized database system.¹³⁻¹⁵

The Pharmacy Department at Vancouver General Hospital, a 1000-bed tertiary care hospital, is responsible for a Regionalized Clinical Pharmacy Services Pro-

gram in which over thirty baccalaureate and doctoral pharmacists performed a variety of clinical functions on a rotational basis, seven days per week. Prior to this study, the Department used a manual system of workload documentation for the clinical program. A review of the manual data collected in 1990 revealed significant variability in the pharmacists' interpretation and documentation of interventions. Pharmacist discontent with the manual system was also identified. These problems were also documented by others.^{3,7-12} It was apparent that a modification of the clinical workload documentation system at this hospital was required.

The purpose of this paper is to describe the development, implementation and evaluation of a new clinical workload documentation system which uses a computer-based program to facilitate data collection and analysis.

METHODS

Historical Statistics

In February 1990, the Regionalized Clinical Pharmacy Services (RCPS) Program was instituted by the Department of Pharmacy. Through this program, clinical pharmacists performed a variety of clinical functions throughout the hospital including patient, clinic and Kardex rounds, pharmacokinetic monitoring, selective drug monitoring, medication histories, patient counselling and others. Approximately 12 baccalaureate and doctoral pharmacists were scheduled for clinical work five days weekly and one pharmacist was available during the weekend. At the beginning of this study, clinical workload statistics were recorded manually. Pharmacists were responsible for documenting the patients reviewed and the "Drug Review Episodes (DRE)" performed

according to drug type. A DRE was defined as a review of a health record to assess a potential therapeutic problem for a drug for an individual patient. For example, a pharmacokinetic assessment of digoxin and a review of potassium supplementation in a given patient would qualify as two DRE.

Development of a Computer Program (CARCAS)

Drug distribution is assisted by a computerized program (BDM Systems Solution 1/Model 600, 1991, Saskatoon, Saskatchewan) which generated a general demographics and medication profile for all patients. Since the pharmacists were very familiar with the distributional computer and multiple terminals were available for data input, we elected to use this system as the template for the development of a Computer-Assisted Retrospective Clinical Activities Statistics (CARCAS) Program.

The concept behind the CARCAS Program was that computerized BDM patient medication profiles could also serve as a clinical workload data collection system. This permitted the clinical pharmacist to enter workload statistics at any terminal at any time and avoided the use of the manual Clinical Activities Form. Under the CARCAS Program, a "pharmacist ward" was created and beds were "occupied" by our clinical pharmacists. Each pharmacist had a patient medication profile identical to that of an actual inpatient. Existing patient and drug data fields were modified to reflect clinical activities. Patient identity was converted to pharmacist name, medication fields corresponded to clinical activities, the physician field was the specific region in the RCPS and each entry reflected one or more DRE. Activity codes were developed by the investigators to enhance the user-friendliness of the

system (Appendix A). These codes closely mimicked the existing formulary codes and were used to designate specific clinical pharmacy activities, thus, minimizing subjective interpretation. The four-part activity codes reflected the nature of the drug (or service), the source of the problem (i.e., method of screening used to identify the potential problem), the nature of the problem and the outcome of any intervention which ensued.

Pre-Implementation Survey

Prior to their introduction to CARCAS, the baccalaureate clinical pharmacists were surveyed to determine their impressions of various issues pertaining to the clinical program and the existing manual system for collecting clinical workload statistics. A standardized 24-item written questionnaire was developed and administered to these pharmacists. Questions were designed to solicit impressions of the manual system, suggestions for improvement, and comments on the potential role of computerization. Surveys were completed by the pharmacists independently and collected by one investigator (MD) within seven days of distribution.

Implementation of Trial CARCAS Program

At the time of this study, the hospital was divided into four geographically-based clinical pharmacy regions. Three of these regions were identified for the sequential trial implementation of the CARCAS Program. One region was excluded from the initial trial due to involvement with other program development activities. During the period November 9, 1990 through May 10, 1991, clinical pharmacists assigned to these trial regions were given 30-minute training sessions by one investigator (MD). This investigator was also available on a daily basis to provide additional

