UTILIZING THE VETERINARY HOSPITAL COMPUTERIZED DATA BASE

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The ultimate goal of research at the Ontario Veterinary College (OVC) at the University of Guelph is the development of a computerized medical data base utilizing both Veterinary Teaching Hospital (VTH) and private practice computerized records. This will support ongoing health monitoring and provide an unlimited source of non-invasive research material and ultimately improve delivery of veterinary medicine.

Veterinary epidemiologists have been promoting the use of computerized record keeping systems for many years (Thrusfield). In 1986 the guest editor of "Computers in Veterinary Practice" predicted that "the profession will be totally computerized by 1990" (Smith, 1986). It's 1991. "Totally computerized" we're not. Informal surveys done in Ontario several years ago (R.G. Maxie, personal communication) estimated that 55% of veterinary practices utilizing the government laboratory services had a computer and current estimates would likely be higher still.

Even among "computerized" practices, however, the extent to which the hardware and software are being utilized is highly variable. A large number of practices have automated invoicing, and most are using vaccination reminder capacities, however, few to none are fully utilizing the data base capabilities. It is probably fair to say that most practitioners do not have a clear (or even vague) understanding of the scope of potential uses to which their data bases could be put (Sandness, 1989).

Veterinary teaching hospitals should be taking a leadership role in this area. They must show practitioners that use of information from the medical data base supports and improves delivery of services to clients and patients. Students must be not be only exposed to, but convinced of the importance of this approach so that they will become innovative and influential practitioners (Anderson and Jay, 1983).

Concerns that referral hospital populations may not be representative of those of general practices do not limit the usefulness of within hospital data evaluation, nor eliminate between practice comparisons. Understanding of the hospital experience, including prevalence of disease, diagnostic information and description of performance, should be an integral part of teaching, research, and self-assessment. This information is important and useful for every practice, academic or private, and would provide useful medical as well as practice management information.

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In order to address some of the problems, and the potential, for use of integrated data bases, this paper will briefly outline experiences with the OVC VTH data base. VMIMS (Veterinary Medical Information Management System) is a computer system developed by the OVC Computer Group which supports the day-to-day gathering of data in the admitting/discharge, billing, medical records, pharmacy, clinical pathology, microbiology, radiology, pathology and parasitology areas of the hospital. Although the system effectively supports VTH business applications, the top priority is the organization and retrieval of data. The continually updated VMIMS software now has more of a PC oriented interface. It is user-friendly, particularly for viewing of individual cases and simple searches on combinations of patient characteristics and diagnostic codes. However, in spite of an excellent computer system and adequate training and support the data base is not fully exploited. A committee of medical records, computer and epidemiology personnel is actively conducting trial analyses and monitoring usage in attempt to identify and rectify reasons for this underutilization.

Some graduate students and faculty routinely use the system to monitor laboratory findings, case progress and to review case series of specific diseases. One clinician developed a prognostic model of equine pleuritis using historical and clinical information at case presentation to predict recovery probability, using logistic regression (Hare and Bonnett, 1991). This presentation was judged the best graduate student presentation at the 1991 meeting of the American College of Veterinary Internal Medicine. This might lead us to hope that clinicians will become more interested in a quantitative approach to diagnosis as they become more familiar with the possibilities and potential inherent in the data base.

Second year veterinary students accessed the data base as part of an integrated pathology-epidemiology-immunology project. Some identified and summarized previous cases of an observed disease, and very simple case control studies were performed. Students were enthusiastic about this approach, feeling that comparing current and past experiences was an effective learning tool. However, for many conditions there were concerns about data validity and completeness, and a lack of hospital population information limited the extent to which comparative analyses could be performed.

A private practice which felt they were experiencing an increased rate of post-operative complications following elective surgeries in cats asked for help in an "outbreak investigation". After calculating the rate of occurrence of problems we realized we had no existing estimates with which to compare their performance. Research is under way to obtain prevalence estimates from both the VTH and private practices. It is almost inexcusable to think how little quantitative information we know about the performance of veterinarians, in academic and private practice, for even the most common and ubiquitous procedures.

The greatest worry relative to the use of VMIMS data (and probably most live medical data bases) concerns data quality.

Clinicians have been frustrated with retrieval, i.e. not being able to refine search criteria enough or conversely not accessing all the cases which should be included. These problems arise because of inadequate or inconsistent hierarchical coding systems, use of inconsistent nomenclature by clinicians, and inaccurate or inconsistent coding on the part of the medical records secretary. This situation has occurred, in this author's opinion, partly because systems have been designed to mimic the way clinicians make diagnoses without a view to how the data will ultimately be retrieved and used. Compromises are possible but may require a data base and research knowledgeable person (a clinical epidemiologist?) to act as liaison between the clinicians and the programmers to develop mutually satisfactory systems.

Other data quality problems arise due to the lag time between conclusion of cases and completion of records by clinicians and delayed coding by staff in medical records. We have modified certain administrative procedures at discharge and have input some automatic edits on data to reduce this problem (for example animals which undergo castration are automatically updated from Male to Male Castrate). We are also examining ways to use descriptive statistics of clinician efficiency (eg. time from discharge to record completion) to stimulate improved compliance (eg. as measures of clinical performance for promotion and tenure considerations).

Record keeping must be seen as an integral part of case handling. More extensive and innovative use of hospital data base information will hopefully stimulate clinicians and lead to improved development and use of computerized record keeping systems. Experience with the VTH data base will streamline procedures for access to and use of private practice data bases.

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