

SECTION 8

**ABSTRACTS OF POSTER PRESENTATIONS
AT THE TEACHING WORKSHOP**

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An Integrated Approach to Case Stimulations: Student-Authored Cases Using "Exam System" Software

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For the past five years, case simulations have been used as part of the Junior-Year Clinical Pharmacology curriculum at the Virginia-Maryland Regional College of Veterinary Medicine. Because of limitations on faculty numbers, these simulations have been done in small (5 to 10 student) groups and discussions have been dominated by the faculty and more aggressive students. Student criticism of this approach has included: 1) student participation was influenced by confidence and speed rather than knowledge and ability, 2) those students most in need of guidance and interaction with faculty receive the least attention. Faculty criticism centered on an inability to evaluate individual students and a concern that the experience was not perceived as "real" by the students. "ExamSystem" software developed at Mississippi State University College of Veterinary Medicine provides a mechanism by which the case simulation experience could be distributed to individual students without increasing direct faculty contact.

While preparing case simulations for use in this student experience, it occurred to one of us (Wilcke) that

"ExamSystem" provided a helpful structure that could be applied to the analysis of clinic cases by Senior veterinary students. Consequently, preparation of "ExamSystem" cases has been included as one of a number of alternative projects to satisfy the requirements of a Clinical Pharmacology elective hospital rotation. Seniors participating in this elective experience derive the case materials from those presented in rounds or provided to the Clinical Pharmacology Service by way of consultations from other hospital services.

We believe that this provides the following benefits: 1) Senior veterinary students learn a structured approach to therapeutic decision making, 2) Junior students are provided with real cases that were derived from cases managed at the VMTH, 3) the therapeutics case library grows rapidly, and 4) faculty involvement in the development of case simulation materials is limited to supervision and instruction without the imposition of time at the computer keyboard for each case.

Case Authoring System

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In veterinary medical education there is a constant dilemma for the professor in trying to impart both didactic information and the thought processes necessary for the proper use of that information prior to the clinical years. Case analyses in the classroom are useful for this purpose but they have limitations in that they consume a large amount of class time such that it may be difficult to pursue all possible treatments for a condition.

A Hypercard-based case authoring system is presented which allows the instructor to create an interactive case analysis for use on the Macintosh microcomputer. The cases may be as simple or as complex as the author desires. Several such lessons will be

demonstrated which stress proper drug selection for the antimicrobials, autonomic agents, and cardiovascular agents. Cases dealing with other disciplines will also be available for demonstration.

The students at Mississippi State University College of Veterinary Medicine have been required to use cases as self-instructional lessons which provide instant feedback on the rationality of their drug selection. During the last semester in which they were utilized, 40 of 42 freshman veterinary students who completed the basic pharmacology course felt the cases were beneficial and recommended that their use be continued at the present level (48%) or expanded (52%).

Creating Personal Literature Files Using Computer-Readable Journal Strips

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One of the common problems facing the veterinary practitioner and the research scientist is the management of increasing medical information. Even if there is time to read the journals to which one has subscribed, it is often difficult to find an article when information is needed unless it is filed and indexed in a personal (filtered) bibliographic system.

With the increasing prevalence of personal computers, databases are a logical tool for producing such literature files. Indeed these programs make searching for reprints or clipped articles exceedingly easy. Unfortunately, entering the data into the computer requires a considerable amount of time and effort.

A plan now exists which we believe will substantially ease the production of personal bibliographic files. Several journals have recently begun encoding their journal information into computer-readable strips using a

type of bar code known as a "softstrip" (found in the back of each issue). With the aid of a strip reader costing approximately \$220.00 (Cauzin Systems, Inc; Softstrip-Vet; 835 S. Main St; Waterbury, CT 06706) the strips are scanned into a computer. The resulting files can be readily imported into most commercial databases. These strips contain (in a comma-delimited ASCII format) the title, authors, volume, year, issue number, pages, summary, and key words for the articles within that issue. This scheme, sometimes referred to as "Stripsearch", offers the advantages of easy electronic capture of journal information for a one time affordable investment. Ultimately, the success of the endeavor will depend upon the perceived benefit by the journal subscribers and their support.

"Sugardoggie": A Computer Model of Insulin/Glucose Pharmacodynamics in the Dog

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"Sugardoggie" is a computer model of glucose-insulin pharmacodynamics in the diabetic Beagle dog. The model, based on literature data and on data generated in live animal laboratory classes with veterinary students, was developed for the Macintosh computer using the authoring tools of Stella® and StellaStacks® (High Performance Systems Inc.) and Hypercard (Apple Computers).

"Sugardoggie" provides compartmental modelling, at user selected dose and dose interval, of: Regular insulin (SC, IV bolus and IV infusion), NPH insulin (SC), glucose (oral and IV bolus), dextrose (IV infusion) and complex meals. Also modelled are renal clearance of glucose and the effects of plasma insulin on hepatic glucose metabolism. The program caters to user preferences for model run time, pause interval and insulin

sensitivity. The interface for user input is object-oriented and intuitive.

The clinical status of the "patient" is reported every 15 simulated minutes and the user can sample blood or urine glucose at arbitrary times or at predetermined intervals. Therapy can be altered during the simulation in response to the reported status. Plots of blood glucose, urinary glucose, and blood insulin are available during or at the end of the model run time.

Although limited to the systems modelled, "Sugardoggie" has been used in place of live animals to teach veterinary students about various modes of insulin therapy, providing the opportunity to readily visualize the effects of different therapeutic approaches to diabetes mellitus.

Medical Interaction Laboratory

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The Medical Science Interaction Laboratory at the University of Tennessee, is a unique concept in veterinary education that is designed to give the student experience and expertise in the areas of applied physiology, applied pharmacology, experimental surgery and pathophysiology. The course is multidisciplinary in nature, and the surgical and experimental approach are quite broad. The course reinforces and expands physiologic and pharmacologic concepts, and related pathophysiologic changes to clinical situations. Laboratory sessions expose students to basic surgical techniques, and instrumentation of surgery and experimental physiology and pharmacology. Although the techniques and instrumentation used in some experiments are mainly academic in nature, the facts and principles

demonstrated are of clinical significance. Teaching surgical techniques with an experimental perspective, helps to bridge basic science disciplines with the clinical sciences. Course format includes small group (4-5) tutorial sessions, supplemented by individual and group self-instruction. Laboratory experiments are performed by student groups, with back-up support provided by the faculty and technicians. Tutorial discussions specifically are related to laboratory exercises; however, students are expected to explore certain aspects of the basic sciences and clinical practice both as individuals, and with those in their group. The overall goals of tutors is to guide students in joining the preclinical and clinical sciences into a unified understanding of veterinary medicine.

Package Insert-Based Take Home Examinations in Veterinary Pharmacology - Pros and Cons

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Our sophomore veterinary pharmacology course at Cornell University has recently utilized take home exams based on the incorporation of drug package inserts into the questions. The format involves the presentation of hypothetical clinical situations and questions are constructed pertaining to use of the drugs described in the package insert in the treatment of the case. Questions of a basic and/or clinical nature can be employed to emphasize points about the pharmacology of the drugs.

There are several advantages to the use of this approach. Exams based on this format emphasize problem solving rather than rote memorization. Students are encouraged to search the literature in answering the questions and thus become familiar with sources of pharmacological information for future use. The exams are

of a more "real-world," practically-oriented nature than can be utilized in the traditional examination format. Importantly, students perceive the exams as less stress-inducing.

While student evaluations of this examination format have generally been very positive, acceptance has not been universal. Occasional students have indicated that they may not learn and remember the material as well as if forced to memorize it for the traditional examination. Unless carefully designed, questions may tend to ignore components of the course. Finally, this examination procedure tends to be labor intensive, both from the point of view of constructing thought provoking, problem solving questions as well as in evaluating the completed exams.