University of Missouri
College of Veterinary Medicine

INFORMATION FOR: Admissions   Current Students   Alumni & Friends   Faculty & Staff   Veterinarians

About the College

Departments

Teaching & Research

Giving to Vet Med

Veterinary Health Center

Veterinary Medical Diagnostic Laboratory (VMDL)

CVM Employment

Zalk Veterinary Medical Library

CVM Course Materials

MyZou

Home

NEWS & EVENTS

CVM-Housed Database Helps Veterinary Researchers Investigate Diseases, Track Trends

The rate of American men with prostate cancer saw a surge in the 1990s following the development of the prostate-specific antigen test. While the spike may have seemed alarming, there is no evidence that there was an increase in the number of men developing prostate cancer; rather the PSA test allowed doctors to diagnose the disease earlier and more accurately.

In 2005, Jeffrey N. Bryan, DVM, MS, PhD, DACVIM (Oncology), had recently completed a residency in medical oncology and was working as a research assistant professor at the University of Missouri College of Veterinary Medicine. To further examine the role of dogs as models for human disease, Bryan investigated whether there was any correlation between the rate of prostate cancer diagnoses in dogs and that of people.

"Following the attention on prostate cancer of the late 1990s, the veterinary profession became more aware of the disease in dogs," Bryan said. "It was interesting to look at that parallel."

Bryan, now an associate professor at MU, focused on whether there was an association between castration and

Loren Schultz, DVM

the risk of prostate cancer development. To gather the data needed to investigate his theory, he turned to the Veterinary Medical Database (VMDB). The VMDB allowed him to examine the medical records of more than 2,000 dogs.

William Priester, DVM, MPH, of the National Institutes of Health National Cancer Institute started the VMDB in 1964. The original goal was to track cancer occurrences among domestic animals seen at schools and colleges of veterinary medicine in the United States and Canada. Michigan State University was the first institution to submit data, which at the time was manually re-entered onto punch cards and stored on the computer system of the era.

The University of Missouri was the next veterinary program to join the effort in 1965, with an additional 27 programs joining during subsequent years. Member institutions contributed

information about all species of animals treated in their hospitals for all diseases and conditions. Information gathered included the age, sex, location, symptoms, treatments and outcomes of the animal patients.

In 1975 with Priester about to retire, a consortium of schools met and formed the Association of Veterinary Medical Program Participants to administer the database. Allen Hahn, a professor of Veterinary Medicine and Surgery at the University of Missouri College of Veterinary Medicine (CVM), who had been involved with the VMDB since its inception, was elected president and began the work of finding a new home for the growing volume of veterinary medical data.

The VMDB was transferred from the NIH to Cornell University in New York. In 1987 the database was moved to Purdue University in Indiana, and in 2006, it was moved again, this time to servers housed at the University of Illinois at Urbana-Champaign. A budget cut and loss of office space at Illinois in 2014 prompted another relocation of the VMDB to the MU CVM, where it remains.

Wayde Shipman, DVM, who also possesses a master's degree in computer information systems, of Virginia-Maryland College of Veterinary Medicine, was the association's president at the time. He worked with Matthew Keeler, associate director of Information Technology at MU, to coordinate the transfer of data from the old servers to newer equipment that was available at the CVM.

"The old servers were at risk of failing so we moved the data to more stable equipment available here at MU." Keeler said. "We have plans to get everything on the most current-generation hardware and operating systems this summer. Other than the ones in our hospital and diagnostic lab information systems, VMDB is the largest database we administer in the college."

MU CVM Associate Teaching Professor Loren Schultz, DVM, is serving as the president of the association for a two-year term. Hahn, now an emeritus professor at the MU CVM, serves as the program director.

Since the database was moved to MU, the existing interface has been refined. Lingxue Wu, an MU graduate student working in the office of the director of informatics, developed software to automate online inquiries for case information. Previously, requests for information had to be managed by an individual.

Schultz said his goals as association president are to expand the number of universities with veterinary colleges submitting case information and develop software to collect that data so that submission of information can also be expedited. There are currently about a dozen veterinary hospitals still involved with the VMDB.

"The problem now is submitting information is not automated," Schultz said. "Someone has to collect it and code it. We want to make that easier so it's seamless, which will encourage more veterinary hospitals to come on board."

The information collected to date is actually divided between two databases: The older coding version is in Standard Nomenclature of Veterinary Medicine (SNVDO) and the newer Systemized Nomenclature of Medicine (SNOMED). The two databases now comprise records from 30 institutions on 3.5 million patients and 7.8 million hospital visits. The records are searchable for free to member institutions whose faculty are conducting research.

Return to News and Events home

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