

ALBERTA VETERINARY MEDICINE STEERING COMMITTEE



FINAL REPORT

JANUARY 2008

For additional copies contact:

Alberta Advanced Education and Technology
11th Floor, Commerce Place
Edmonton, Alberta
T5J 4L5

Telephone: (780) 644-8916
Fax: (780) 427-4185

ALBERTA: ALBERTA VETERINARY MEDICINE STEERING COMMITTEE
Final Report of the Steering Committee

Cover Photo: John Hull

This report was prepared by the Alberta Veterinary Medicine Steering Committee from input provided by stakeholders. The views and positions do not necessarily reflect those of the Government of Alberta

Alberta Veterinary Medicine Steering Committee

Final Report

- Contents 1
- Preface 3
- Executive Summary 3
 - University of Calgary Faculty of Veterinary Medicine (UCVM) 3
 - Strategy for post-secondary education and research in animal health..... 4
- Summary of AVMSC Statements of Support and Recommendations 5
- Historical Background..... 11
- Members of the AVMSC 12
- AVMSC Terms of Reference 13
- Creating a Vision..... 14

- University of Calgary Faculty of Veterinary Medicine (UCVM)** 17
 - Overview 17
 - Doctor of Veterinary Medicine Program 18
 - Areas of emphasis..... 18
 - Graduate Programs 21
 - Continuing Education (CE) and Professional Development 21
 - Research 22

- Strategic Objectives for the Animal Health System**..... 23
 - Summary 23
 - Veterinary Practice 24
 - Overview 24
 - Issues 24
 - Veterinary Practice in Alberta..... 25
 - Overview 25
 - Specialty veterinary practice 27
 - Public practice veterinary services 27

- Refocusing and Restructuring the Delivery of Veterinary Services**..... 28
 - Present Trends in the Livestock Industry 28
 - Rural Community Veterinary Practice (RCVP)..... 29
 - RCVP Services 30
 - Minimum conventional rural multi-species practice services 30
 - Desirable or possible public practice services 30

RCVP Team	31
Summary	32
Enhancing Diagnostic and Surveillance Services	32
Educating Human Resources for the Animal Health System	34
Post-Secondary Educational System Overview	34
Doctor of Veterinary Medicine (DVM)	36
Overview	36
Licensing	37
Recruiting veterinary students	37
DVM Admissions Processes	37
Deferred admission	39
Enrolment	40
Subsidizing students	41
International students	41
Assisting International Veterinary Graduates	42
Enhancing DVM Programs in a Field of Veterinary Medicine.....	42
Bachelor of Science in Animal Health	43
Animal Health Technology	45
Graduate Education	46
Stipends for graduate students	49
Continuing Education (CE) and Professional Development.....	50
The “Campus Alberta” Approach	51
Developing Capacity in Veterinary Research.....	52
Coordinating the Animal Health System	54
Appendix I Environmental Scan	55
Appendix II Acronyms	58
Appendix III List of AVMSC Contacts	60

Preface

The AVMSC was established in early 2005 to provide overall advice on issues related to the implementation of the new faculty of veterinary medicine being established at the University of Calgary and to develop a comprehensive strategy to integrate post-secondary programs and research for animal health sciences, thereby enabling optimal delivery of animal health services in Alberta.

The Committee issued its first Interim Report in June 2005 and its second Interim Report in April 2007. This Final Report responds to feedback from its earlier Reports and to current events. The Committee's deliberations on the concept "Rural Community Veterinary Practice" were incorporated into an article published in the *Journal of Veterinary Medical Education*¹.

Change in both rural and urban Alberta society continues apace. The AVMSC hopes the recommendations and strategy outlined in the following help build a stronger foundation for the development of human resources needed in the animal health system in the future. It is only a beginning.

The Committee extends its appreciation to those individuals and organizations that have shared their views with the Committee. The Committee also thanks the staff of the Department of Advanced Education and Technology who have provided excellent advice and logistical support, namely Connie Harrison, Andrea Marshall, Ed Kozakewich, and Sheri Jenkins.

Executive Summary

University of Calgary Faculty of Veterinary Medicine (UCVM)

In the Fall of 2007 the UCVM received 1) a Letter of Reasonable Assurance of Accreditation of its proposed DVM program from the AmVMA/CVMA Council of Education; and 2) Ministerial approval of the DVM program on the recommendation of the Campus Alberta Quality Council. This has cleared the way for the UCVM to admit the first class of 30 veterinary students in the Fall of 2008.

The physical plant needs of the new UCVM faculty for student support, educational activities, faculty offices, and research laboratories are being provided in the Health Sciences Complex. Clinical skills and anatomy will be taught in a new Clinical Skills Building currently under construction at the Spy Hill campus and clinical and other research will be supported through the Veterinary Sciences Research Centre (formally the Life Sciences Research Station).

The UCVM has developed to the point that the engagement of the AVMSC in the process is no longer required. The Committee supports the development of a four-year DVM program whose curriculum will provide a general veterinary education foundation, a core in general veterinary practice, and elective opportunities for enhancement in areas of emphasis, namely: production animal health; equine health; public and ecosystem health; and investigative medicine.

¹ Nielsen NO, Evans B, King LJ. 2006 The concept of Rural Community Practice (RCP) *J Vet Med Educ* 33: 549-553.

It is supportive of UCVM's extensive use of partnerships, *viz.* with private practices, government, and other groups to deliver clinical and practicum training; with other academic institutions to enhance its programs or to avoid duplication of resources; and with the veterinary profession and other post-secondary institutions to develop continuing education programs. The AVMSC supports the intention of UCVM to be a research-intensive faculty and recommends the provision of adequate funding to carry out this task.

Strategy for post-secondary education and research in animal health

In regard to the task of proposing an animal health strategy for post-secondary institutions, the AVMSC of necessity had to posit a broader strategy to assess the province's human resource needs. The increasing connectedness in the world poses serious threats to animal health that in turn is inextricably linked to public health and ecosystem health. Alberta must have the capacity to deal with all significant issues related to health and disease in animals (farm livestock, companion animals, fish, wildlife, zoo species), especially disease prevention, detection, diagnosis, and effective response.

Several strategic challenges are of particular concern: 1) maintaining veterinary services to rural communities; 2) enhancing human and institutional resource capacity in veterinary public health and ecosystem health; 3) providing the means to secure new knowledge and skills through research to better manage for animal, public, and ecosystem health; and 4) providing channels of communication to enhance cooperation and coordination of programs among all the stakeholders. Meeting these challenges must engage more than the traditional health professions.

The AVMSC supports the concept of rural community veterinary practice that would deliver public practice services including those encompassed by food supply veterinary medicine. These practices need to have available a spectrum of human resources such that the level of training of the service provider can be matched cost-effectively to the task at hand. They also need to be supported by public sector resources that provide comprehensive diagnostic and surveillance services by supportive public policies.

The report recommends or supports action in the education of veterinarians at both undergraduate and graduate levels to ensure the profession is able to continue to meet society's needs. It supports the establishment of new baccalaureate programs in animal health at the Universities of Calgary and Alberta and recognizes the shortage of AHTs and the need to give them more options for advanced training to play a more significant role in delivering veterinary medical services.

The establishment of the UCVM and the commitment of the University of Alberta to veterinary research through the establishment of Alberta Veterinary Research Institute have provided Alberta with extraordinary research potential in animal, public, and ecosystem health. In order to maximize the potential of this resource, it is important that research funding agencies or institutes in Alberta and Canada recognize the importance of strategically investing in animal health.

Summary of AVMSC Statements of Support and Recommendations

In the following, the AVMSC indicates its **support** for actions/decisions taken during the course of its deliberations or its **recommendation** for actions/decisions not yet taken.

University of Calgary Faculty of Veterinary Medicine (UCVM)

Overview

Supports the Mission Statement prepared by the UCVM faculty.

Doctor of Veterinary Medicine (DVM) Program

Supports the decisions taken by the UCVM to:

adopt a four-year DVM program;

accept the first class of DVM students in the Fall of 2008;

adopt prerequisite course requirements that can be completed by students from all four Alberta universities and most colleges within two years;

use admission criteria that favour students with long term interests in serving rural communities and in one of UCVM's areas of emphasis;

develop a curriculum that delivers an innovative DVM program that will emphasize production animal health, equine health, ecosystem and public health, and investigative medicine, while providing sufficient content to prepare graduands to pass the North American Veterinary Licensing Examination (NAVLE);

use pedagogy based on a "clinical presentation model" modified from that used in the University of Calgary Faculty of Medicine;

use a Distributed Veterinary Learning Community (DVLC) of institutional and private partners to provide clinical and practicum experience for senior veterinary students in all major fields of veterinary medicine and that includes private veterinary practices organized into a Distributed Veterinary Teaching Hospital (DVTH);

develop program linkages with the University of Alberta Faculty of Agricultural, Life and Environmental Sciences, Olds College, and other institutions to enhance undergraduate and graduate DVM education.

Recommends that UCVM approach Alberta's Regional Health Authorities and environmental consulting firms as potential partners in the UCVM Distributed Veterinary Learning Community.

Graduate Programs

Supports UCVM's integration of research activities with that of the Faculty of Medicine, where appropriate.

Supports UCVM's intention to have all clinical residency programs² combined with graduate degrees.

Supports UCVM's implementation of advanced clinical and practicum training programs in fields it has chosen to emphasize.

Supports UCVM's need for financial support for graduate DVM students, interns, and residents.

Continuing Education (CE) and Professional Development

Supports UCVM's inclusion of continuing education in its mission.

Recommends that UCVM develop programs with defined outcomes to support professional development.

Recommends that UCVM seek to coordinate its continuing education and professional development activities with professional and academic organizations in the region.

Research

Supports UCVM's plan to align its research efforts with the areas of emphasis of the Faculty, with attention to areas where animal and human health inter-relate.

Supports UCVM's plan to integrate, where appropriate, its research activities with the Faculty of Medicine and to establish an integrated research infrastructure with the UC's Health Research Institutes.

Supports the participation of the UCVM in an Animal Health Research Network (see later).

² Advanced clinical training in a medical specialty in a hospital or clinical setting

Strategic Objectives for the Animal Health System

Refocusing and Restructuring the Delivery of Rural Veterinary Services

*Recommends that Alberta Agriculture and Food and those presently participating with it in developing an animal health strategy for Alberta consider the merits of implementing the concept of **Rural Community Veterinary Practice (RCVP)**, as a means of assuring that rural Alberta continues to have available and affordable veterinary practice services that are essential for maintaining animal, public, and ecosystem health and promoting and safeguarding economic prosperity.*

Recommends that research be conducted to evaluate the economic merits of new systems for supporting rural veterinary practice and delivery of food supply veterinary services.

Recommends contracting more public practice services provided wholly or in part by government to rural practices.

Enhancing Diagnostic and Surveillance Services

Supports the continued development of the Alberta Surveillance Network (ASN).

Recommends the development of diagnostic pathology and laboratory services to support the food animal, equine, and other animal industries in Alberta and to protect human health. These services should be capable of meeting the essential requirements for accreditation of the American Association of Veterinary Laboratory Diagnosticians³ (AAVLD).

Recommends that any new diagnostic support services capitalize on existing strength in Alberta such as expertise available at the UCVM or provided through collaboration with other regional diagnostic agencies.

Educating Human Resources for the Animal Health System

Doctor of Veterinary Medicine

Recommends that the veterinary profession take the lead in recruiting prospective students from all walks of society.

Recommends UCVM and WCVM consider harmonizing course prerequisites for admission to DVM programs.

Recommends granting deferred admission to the DVM program to allow students to undertake further animal health education that will be of particular value in a field of veterinary medicine.

³ AAVLD accredits diagnostic laboratories in North America. <http://www.aavld.org/mc/page.do?sitePageId=33930>

Recommends granting fourth year equivalency for the first year of the DVM program in the proposed BScAH program and potentially in other BSc degree programs where the DVM program can be deemed similarly acceptable.

Supports providing for an annual enrolment of at least 50 Alberta veterinary students, 30 at UCVM and 20 at the WCVM, as a benchmark that should be re-evaluated regularly in a process led by the AbVMA 1) to assure needs of the province and the nation for veterinarians are being met, and 2) to utilize capacity to expand DVM enrolment at both UCVM and WCVM as circumstances warrant.

Recommends providing financial incentives for students committed to entering fields with high societal priority like food supply veterinary medicine (FSVM).

Supports enrolling international veterinary students in graduate programs or with advanced standing in DVM programs.

Recommends that the UVCVM and WCVM allocate whatever capacity is available to 1) prepare international veterinary graduates to have the competence to pass the National Examining Board (NEB) clinical competency examination, and 2) administer such examinations for the NEB.

Recommends cooperative program development between UCVM and other institutions that are planned to make optimal use of BSc, DVM, and graduate degree or diploma programs to provide new graduates with advanced skills in high priority fields of veterinary medicine e.g. food supply veterinary medicine (FSVM).

Recommends collaboration among various post-secondary institutions involved in animal health to capitalize on opportunities to share perspectives, expertise, and physical resources.

Supports maximizing opportunity for DVM students to gain credit for courses taken in other programs and institutions that enhance knowledge and experience in the field of veterinary medicine they wish to emphasize.

Bachelor of Science in Animal Health (BScAH)

Recommends the establishment of BScAH programs, as proposed by the UC and UA.

Recommends establishing financial incentive for BScAH students granted deferred acceptance to a DVM program and undertaking enhanced education focused on rural practice and/or food supply veterinary medicine (FSVM).

Recommends that the AbVMA consider the implication for amendments to provincial veterinary legislation that would allow for the registration of baccalaureate graduates and their participation in certain activities within the scope of veterinary medicine.

Recommends allocation of the financial resources required to implement the BScAH programs.

Animal Health Technology (AHT)

Recommends expanding AHT enrolment if the shortage of graduates continues despite recent increases.

Recommends initiatives by the AbVMA that encourage or permit veterinarians to delegate more technical procedures to AHTs.

Recommends the development of formal education programs to provide advanced medical technology training to AHTs.

Recommends the development of 6-12 month training programs for veterinary assistants.

Graduate Education

Recommends that research-funding agencies in Alberta assure the availability of stipends that will attract veterinarians and other animal health professionals into graduate programs.

Recommends the establishment of graduate programs supported by provincial stipends for students who wish to specialize in food supply veterinary medicine and other animal health related degrees.

Supports the establishment of practice based Post Graduate Diploma and/or Masters degree programs at the UA Faculty of Agricultural, Life and Environmental Sciences (ALES) and the UCVM for veterinary graduates and, where desired, serve as a component of a combined degree program for in-program DVM students at the UCVM and the WCVM.

Supports the establishment of MPH or equivalent degrees and the development of new generic programs that provide training in veterinary public health at the Universities of Calgary, Alberta, and Saskatchewan.

Continuing Education (CE) and Professional Development

Recommends that universities, colleges, and technical institutes in Alberta's animal health system collaborate in offering comprehensive professional development programs for veterinarians and such other CE as may be appropriate for those with interests in animal health.

Campus Alberta

Recommends that UC, UA, UL, and CTI continue to strive to execute plans that foster the "Campus Alberta" approach in the animal health education system.

Developing Capacity in Veterinary Research

***Recommends** the Province of Alberta take steps to assure investment in both basic and applied veterinary research.*

***Supports** plans to establish a regional (if not national) Animal Health Research Network (AHRN) to encourage collaboration and networking among academic institutions and other relevant agencies.*

***Supports** the continued development of Alberta Veterinary Research Institute (AVRI) as a mechanism to encourage and focus veterinary and animal health research at the University of Alberta and to facilitate collaboration with institutional partners with shared interests.*

***Supports** AVRI's inclusion of a focus on the nexus of animal, public, and ecosystem health – and its commitment to emphasize three theme areas: food safety, quality, and sustainability; animal public and environmental health; and food animal systems, markets, and society.*

Coordinating the Animal Health System

***Recommends** that a standing committee be established by the AbVMA and convened at least once annually to assure communication, coordination, and integration where possible, among the principle institutions and agencies involved in post-secondary education, research, and delivery of services in veterinary medicine and animal health in Alberta.*

Historical Background

The diagnosis of BSE in Alberta 2003, the increasing threat to public health signaled by several emerging zoonotic diseases over a short period *viz.* Severe Acute Respiratory Syndrome (SARS), West Nile Virus (WNV), Avian Influenza (AI), and the coincident devastating experiences with foot and mouth disease (FM) and classical swine fever (CSF) in the UK and the Netherlands respectively, put animal health and disease high on the public agenda. This situation coupled with the veterinary profession's persistent problem of assuring sufficient veterinarians to meet Alberta's needs led to a decision by the Government of Alberta to establish a veterinary faculty to expand opportunities for veterinary education and research in Alberta. In August 2004, after reviewing proposals from the Universities of Calgary and Alberta, the government chose to establish a veterinary program at the University of Calgary.

Subsequently, after consultation with the Alberta Veterinary Medical Association, the government created the Alberta Veterinary Medicine Steering Committee (AVMSC) to provide overall advice to the new faculty and to recommend a strategy that would assure integration and coordination among the various post-secondary institutions with a major stake in veterinary medical and animal health education and research in Alberta. This also included the Western College of Veterinary Medicine (WCVN) at the University of Saskatchewan, with which the province will maintain a contractual agreement to meet some of its needs in veterinary education and research.

For the past 40 years, western Canada has relied on the WCVN to provide students from this region with the opportunity to study veterinary medicine, to provide postgraduate training for veterinary researchers and specialists, and to undertake research on problems of particular interest to this region. The WCVN has a record of excellence in veterinary education and research, in particular in relation to the food animal species. Approximately 75-80% of Alberta's registered veterinarians have received their veterinary education at the WCVN. The Inter-provincial Agreement that provides for sharing the costs of the WCVN is considered an exemplary model of cooperation among provinces in post-secondary education. However given the continually expanding scope of veterinary medicine, the increased need for new veterinary services and expertise to protect human, animal, and ecosystem health and to enhance economic prosperity and the remarkable growth in Alberta's population, it is realistic to believe that no one veterinary faculty can hope to have the capacity and range of expertise to meet all of Alberta's needs in the long run. It was therefore timely to create a new faculty whose program is being designed to complement and expand on the programs offered through the WCVN.

The Inter-provincial Agreement with the WCVN has provided for a quota of 20 Alberta students during most of its existence. During this period, the population of Alberta has more than doubled. The addition of 30 students, the immediate objective at the UCVM, will provide for 50 students to be admitted annually to a DVM program. This will restore the relative opportunity for an Alberta student to obtain a veterinary education to what it was 30 years ago.

Concomitant veterinary research activity at the University of Calgary, in cooperation with the Universities of Alberta, Lethbridge, and Saskatchewan and other animal research agencies in Alberta and beyond, will respond to the escalating threats to animal, public, and ecosystem health and their implications for trade as well as capitalize on new opportunities to enhance prosperity.

Members of the AVMSC⁴

The Alberta Veterinary Medicine Steering Committee (AVMSC) was announced by Dr. Lyle Oberg, then Minister of Alberta Learning, in the Fall of 2004 and its membership confirmed by Minister Dave Hancock in early 2005, at which time the Committee began meeting.

The members of the Committee are:

Name	Position	Affiliation
Ole Nielsen	Chair	Former Dean, WCVM and OVC
Dianna Smith	Past President	Alberta Veterinary Medical Association
Duane Landals	Registrar	Alberta Veterinary Medical Association
Alastair Cribb*	Dean, Faculty of Veterinary Medicine (as of May, 2006)	University of Calgary
Chuck Rhodes	Dean, Western College of Veterinary Medicine	University of Saskatchewan
John Kennelly	Dean, Faculty of Agricultural, Life and Environmental Sciences	University of Alberta
Tom Thompson	President, Olds College	Alberta Association of Colleges and Technical Institutes
Brian Evans	Chief Veterinary Officer	Canadian Food Inspection Agency
Keith Campbell	Past President	Canadian Veterinary Medical Association
Brenda Schoepp**		Livestock producers
Gerald Ollis	Chief Provincial Veterinarian	Alberta Agriculture and Food
Bert Seinen	Executive Director, Community and Learner Connections	Alberta Advanced Education and Technology

* Peter Eyre and Eugene Janzen served as UCVM Dean successively until the appointment of Alastair Cribb

** Gene Rawe represented the livestock industry until the appointment of Brenda Schoepp

⁴ or simply the “Committee”

AVMSC Terms of Reference

Mandate: Reporting to the Deputy Minister, Advanced Education, the AVMSC will develop a comprehensive strategy to integrate post-secondary programs and research for animal health sciences and provide advice on issues related to the implementation of the school of veterinary medicine and thereby enable optimal delivery of animal health services in Alberta.

Membership: The following members will be selected and hold office as follows:

1. A retired Dean of Veterinary Medicine as Chair (in this instance, Dr. Ole Nielsen).
2. The Dean of the University of Calgary's School of Veterinary Medicine or his designate.
3. The University of Alberta (U of A) may appoint one member with preference given to the Dean of Agriculture, Forestry and Home Economics or his designate.
4. The University of Saskatchewan (U of S) may appoint one member with preference given to the Dean of the Western College of Veterinary Medicine (WCVN) or his designate.
5. The Executive Director of Alberta Association of Colleges and Technical Institutes (AACTI) as representative of Lakeland College, Olds College and the Northern Alberta Institute of Technology that each offers an Animal Health Technology diploma program.
6. The Alberta Veterinary Medical Association may appoint two members with preference given to the President and the Registrar or their respective designates.
7. The Canadian Veterinary Medical Association may appoint one member.
8. The Alberta Beef Producers, the Alberta Cattle Feeders' Association and the Canadian Cattlemen's Association may appoint one member from among them.
9. Alberta's Chief Veterinary Officer.
10. Canada's Chief Veterinary Officer.
11. Advanced Education will provide support services through the Assistant Deputy Minister of Adult Learning Division or his designate.

Appointment: Members shall hold office for two years or until a successor is appointed.

Tasks:

Provide overall advice on the shape of the Doctor of Veterinary Medicine (DVM) program.

Provide advice on the development of related veterinary medical programs including, but not limited to, pre-veterinary medical, graduate and continuing education studies and residencies.

Educate itself on potential of existing models of veterinary education so as to ensure that the veterinary medical and related programs:

- prepare graduates for entry to veterinary medical practice and to biomedical science, ecosystem health and public health careers in Alberta and western Canada,
- prepare researchers in human-animal health and food safety,
- focus on large animal and food safety issues.

Work collaboratively to establish linkages with the U of A, the U of C, the U of S WCVN, the Northern Alberta Institute of Technology, Lakeland College and Olds College for all aspects of veterinary medicine and the animal health sciences.

Scope:

The committee may

inquire into any matter and consult with anyone it chooses related to the strategy.

make representation to any individual or office to secure funding for programs of study, research, and infrastructure related to the strategy.

Institutional members of the committee are to develop programs of study that align with the strategy.

Creating a Vision⁵

The AVMSC determined that a vision for the future of Alberta's animal health system was necessary to guide the development of a strategy policy to enhance the scope and quality of animal health services in Alberta. The vision is based on the key components of an efficient and effective animal health system including:

An **education** system that provides the human resources for all components of the animal health system.

Research capacity to expand and enhance knowledge creation and application.

Service delivery that ensures Alberta has the capacity to maintain optimal animal health as well as to detect and control animal diseases of economic, public health, and biological significance.

Public policy that recognizes that not only the animal owner but also the public has a vested interest in maintaining animal health and productivity as well as detecting animal disease that is a potential threat to the wider community.

Looking to 2020, the vision for an animal health system in Alberta is described.

The Vision

Alberta has an integrated, effective, and leading edge animal health system that serves the needs of society.

What the Vision Means

The animal health system of the future integrates animal, public, and ecosystem health. While this integration is complex, the human resource components of the system of the future are inter-related in a way that ensures all components work together for maximum knowledge, service, responsiveness, and simplicity so clients can easily access the types of services and information they need.

Included in the diverse scope of delivery of animal health services are:

Veterinarians

Private veterinary practice

Public practice (in the employ of government or university)

Industrial practice (in the employ of industry)

Other animal health care professionals

Animal Health Technologists

Baccalaureate trained animal health service providers

Experts with graduate degrees

There is general acceptance of the value of protecting and managing animal health in our society. It is understood that all animal health providers are part of a bigger health delivery and environmental protection system.

⁵ From the AVMSC Initial Report, June 2005

In an ideal animal health system, it is envisaged that the level of skill required for a particular service would be matched with the level of training of the service provider in order to provide the most cost effective service. This would occur with due regard for legal responsibilities (e.g. *Veterinary Profession Act*) and considerations of animal welfare. To achieve this end, the Alberta Veterinary Medicine Steering Committee believes there is merit in investigating new educational programs in animal health technology, baccalaureate degree, and advanced degree programs to support the needs of such a system. Affordability to the service provider (business/operation) and affordability to the consumer are drivers of service provision.

The vision anticipates the evolution of business structures for veterinary practice that help address lifestyle/income concerns of rural practitioners and favour the development of the animal health system envisaged by the AVMSC. This includes practices that variously are a.) species specific, b.) multi-location corporate practices, c.) rural community veterinary practices delivering both private and public services, and d.) other emerging types of service. It is understood that multi-person practices or access to multi-person support is essential for practitioners to be able to balance life and work demands.

Biological security and risk management increasingly become key components of animal health service. It is understood that both food safety and animal disease have far-reaching implications to human and herd health. Risk management is actively pursued across research, regulation, and provision of animal health. Components include:

- Disease surveillance systems, both passive and targeted
- Food safety, security, process, and regulations
- Emergency response and risk management strategies
- Wildlife disease knowledge that is an integral component of ecosystem health

The vision requires that all of the components of the animal health system contribute to a healthy environment of people and animals in Alberta specifically, and across the continent as well. Managing for ecosystem health embraces this goal.

Ultimately, health management ensures optimal animal productivity, welfare, and health status that are essential to a livestock industry that is competitive in the international marketplace. It maximizes export opportunities.

Finally, research and innovation that play a key role in developing new knowledge will help veterinary practitioners and health managers to be more effective. The means to cope with totally new, as well as indigenous, animal diseases that could have a significant impact on the economy, public health, or ecosystem health will be at the forefront of research strategies. The interface between research and the practitioners will be enhanced through more effective use of information technology.

Education and training will be streamlined and tailored to suit emerging needs of the animal health system and the learner. Animal health providers will actively pursue continuous learning or professional development opportunities.

Challenges in Veterinary Practice

To achieve this vision, pivotal and rhetorical questions relating to changes in veterinary practice must be addressed now or in the future to best align animal health services with the changing world. Such questions include but are not limited to the following:

- 1) Do existing practitioners accept change in the animal health system and larger roles for practitioners in public health, ecosystem health, emergency response, and recognition of their role in detecting and controlling foreign animal diseases (FAD)?
- 2) Is there greater acceptance of species specialists with stronger communication links between specialists and generalists?
- 3) Should licensing bodies adapt regulation of the practice of veterinary medicine to permit greater delegation of medical procedures to Animal Health Technologists and potential baccalaureate graduates in animal health? Does licensure need to adapt to allow for more flexibility to meet future needs and universality of credentials?
- 4) Can the educational system provide students with the opportunity to move and obtain the level of training they desire? Is it a seamless system? Are there defined tracks?
- 5) Will veterinary practitioners accept a leadership role in employing and developing transdisciplinary teams that provide a wider array of private and public practice services?

It is hoped that the AVMSC's vision together with these and other questions can be used to set the direction for a future integrated, effective, and leading edge animal health system that serves the needs of society in Alberta.

University of Calgary Faculty of Veterinary Medicine (UCVM)

Overview

The AVMSC was charged with the task of providing overall advice on the shape of the Doctor of Veterinary Medicine (DVM) program and ensuring the preparation of graduates for entry to veterinary medical practice and to biomedical science, ecosystem health, and public health careers in Alberta and western Canada.

The AVMSC has served as an ongoing forum for discussion among the various players with a stake in the development and success of the UCVM. As a consequence, decisions taken by the new Faculty have taken into account the views of the constituency represented on the AVMSC.

In this section and those that follow, the AVMSC indicates its **support** for actions/decisions taken or its **recommendations** for actions/decisions not yet taken.

UCVM Mission Statement

Our mission is to meet the veterinary, animal, and public health needs of Alberta through:

- excellence in delivery of a comprehensive undergraduate veterinary medical education, emphasizing production animal health, ecosystem and public health, equine health, and investigative medicine;
- excellence in clinical, diagnostic, and professional teaching and service, in collaboration with our partners in a Distributed Veterinary Learning Community;
- excellence in the creation and distribution of new knowledge through research, graduate veterinary education, and continuing education in animal health, disease, and welfare, and its relation to human health.

Our education, research, and service activities will contribute to the promotion and protection of animal health and welfare, and human health in Alberta, Canada, and internationally.

Vision

Our faculty, students, and graduates will create the future of veterinary medicine and animal health for Alberta, Canada, and global society.

Short form:

“Creating the future of veterinary medicine and animal health”.

UCVM Advisory Committees

The UCVM has established a Stakeholders' Advisory Council (SAC) to provide for ongoing input from the wider community. It is also establishing advisory committees for the Distributed Veterinary Teaching Hospital (DVTH) and the DVM curriculum.

Completion of AVMSC's "overall" advisory function to UCVM

The AVMSC has total confidence in the leadership team that has been appointed at the UCVM. This team and its faculty are creating an innovative program that will emerge in the forefront of veterinary education and research. The UCVM has had the opportunity to recruit faculty members from a large number of very well qualified applicants, a circumstance that continues.

The AVMSC:

Supports the UCVM's Mission Statement prepared by the UCVM faculty.

Doctor of Veterinary Medicine (DVM) Program

In the Fall of 2007 the UCVM received 1) a Letter of Reasonable Assurance of accreditation of its proposed DVM program from the AmVMA/CVMA Council of Education; and 2) ministerial approval of the DVM program on the recommendation of the Campus Alberta Quality Council. This has cleared the way for the UCVM to admit the first class of 30 veterinary students in the Fall of 2008. The AVMSC is confident the Faculty is well on the way to receiving "full accreditation" by the time its first class graduates and will have prepared its members for successfully completing the North American Veterinary Licensing Examination (NAVLE) and entry to all forms of veterinary practice in Alberta. Not only will the UCVM core curriculum ensure expertise in all required practice areas, it is expected to prepare students particularly well in areas the UCVM has chosen to emphasize. The Committee believes, and UCVM concurs, there are opportunities to further enhance the competence of graduates in a particular field of veterinary medicine by combining DVM education with appropriate undergraduate and graduate degree programs.

It must be recognized that the continuing growth of veterinary knowledge and the demand for more specialized skills means that all new graduates may be expected to have a higher level of competence in their chosen field when they enter practice than was the case in the past. It is likely that licensing requirements at some point in the future may require some form of probationary period for new graduates in approved practices before being granted unencumbered licensure. Having practice licenses in designated fields is also a possibility. The AVMSC believes that the system being developed for clinical education by UCVM will be well suited to accommodate these eventualities.

Four areas of emphasis

Production animal health: population and individual animal health of all food and other production animal species; educating veterinarians to meet the needs of the livestock industry and rural Alberta.

The UCVM is committed to education and research to support production animal health (food and fibre producing animals) in Alberta. UCVM recognizes that there are a range of operations, from small backyard operations to major livestock production units. These differing units have specialized needs and UCVM recognizes the need to service all aspects of production animal health.

The livestock industries in the Calgary region and beyond will provide opportunities for clinical training of veterinary students in the Distributed Veterinary Teaching Hospital. More formal classroom and laboratory teaching will be strengthened by cooperation with the University of Alberta Faculty of Agricultural, Life and Environmental Sciences (ALES). Research in these fields will be enhanced by opportunities developed by the proposed Animal Health Research Network and by cooperative opportunities across Alberta and western Canada.

Ecosystem and public health: the interface of domestic animal, wildlife, human, and environmental health; educating veterinarians to meet the needs of society through public and private practice in areas related to public health, food safety, environmental and agricultural interfaces, wildlife/conservation/zoo medicine and health.

The UCVM is strongly committed to the emerging field of ecosystem health. The AVMSC notes the recruitment of leadership and faculty to support this plan. The UCVM has established formal ties with the Centre for Coastal Health, Nanaimo, B.C., the Canadian Cooperative Wildlife Health Centre, Parks Canada, and the Calgary Zoo. These partnerships are elements of the UCVM's Distributed Veterinary Learning Community and serve to provide clinical or practicum experiences for students with a special interest in ecosystem health.

The UCVM since its establishment has made a strong commitment to developing public health as an area for special emphasis and this has been reflected in its recruitment of its leadership and faculty. It has developed strong ties with the Department of Community Health at the UC and joint activities are being developed. UCVM continues to be involved in the development of public health initiatives at the UC and in Alberta.

The AVMSC has determined through consultation with the Alberta Council of Medical Officers of Health and officials of Alberta Health that the health regions would be receptive to arranging opportunities for veterinary undergraduate and graduate students to gain clinical experience or participate in research in public health. UCVM will seek ways to integrate medical and veterinary medical students in public health oriented rotations.

Equine health: population and individual equine health and medicine; educating veterinarians to meet the needs of the horse industry, horse owners, and rural Alberta.

Alberta is a major horse-owning province and the equine industry remains a major indigenous economic engine. Existing (e.g. Spruce Meadows, Olds College) and emerging (e.g. Balzac track) opportunities in the Calgary region and across Alberta provide unique opportunities for students and research at the UCVM. It is working to establish partnerships that will support this area of emphasis and to develop research programs to support equine health in the province.

Investigative medicine: *comparative medicine, biomedical science, and laboratory animal medicine; educating veterinarians to participate in the biomedical research enterprise and contribute to the advancement of animal and human health.*

The demonstrated commitment of the UCVM to research, the integration of many of its biomedical research programs with Medicine and other Faculties, opportunities for students to enhance their program in biomedical science, and the opportunity for students to combine DVM with graduate studies will create a milieu with the potential to attract and launch the training of veterinary biomedical scientists in the undergraduate DVM program. The UCVM is committed to establishing elective undergraduate rotations in laboratory animal medicine to strengthen the clinical program of students aspiring to careers in biomedical science.

The AVMSC:

Supports *the decisions taken by the UCVM to:*

adopt a four-year DVM program;

accept the first class of DVM students in the Fall of 2008;

adopt prerequisite requirements that can be completed by students from all three Alberta universities and most colleges within two years;

use admission criteria that favour students with long term interests in serving rural communities and in one of UCVM's areas of emphasis;

develop a curriculum that delivers an innovative DVM program that will emphasize production animal health, equine health, ecosystem and public health, and investigative medicine, while providing sufficient content to prepare graduands to pass the North American Veterinary Licensing Examination (NAVLE);

use pedagogy based on a "clinical presentation model" modified from that used in the University of Calgary Faculty of Medicine;

use a Distributed Veterinary Learning Community (DVLC) of institutional and private partners to provide clinical and practicum experience for senior veterinary students in all major fields of veterinary medicine and that includes private veterinary practices organized into a Distributed Veterinary Teaching Hospital (DVTH);

develop program linkages with the University of Alberta Faculty of Agricultural, Life and Environmental Sciences, Olds College, and other institutions to enhance undergraduate and graduate DVM education.

Recommends *that UCVM approach Alberta's Regional Health Authorities and environmental consulting firms as potential partners in the UCVM Distributed Veterinary Learning Community.*

Graduate Programs

Research degrees

The AVMSC expects the UCVM, as a matter of course, will have a strong graduate degree research program that complements fields it has chosen for research or clinical emphasis.

Advanced clinical training programs

The AVMSC believes residency-training programs are essential in creating an academic milieu that fosters excellence in veterinary clinical education and research. There are presently 20 specialties recognized by the CVMA/AmVMA. In the absence of a conventional veterinary teaching hospital, the UCVM will rely on partnerships with veterinary practices with specialty board qualified staff, the WCVM, or other institutions or agencies that are in a position to provide residency training acceptable to the specialty board/college in question.

While it is too early to expect the UCVM to have had the time and faculty to establish more complete plans for its graduate programs, the UCVM is committed to advanced clinical training in fields it has chosen to emphasize as well as others of relevance to Alberta. It can be anticipated that research in such programs will take the form of clinical investigation of naturally occurring diseases.

The AVMSC:

***Supports** UCVM's integration of research activities with that of the Faculty of Medicine where appropriate.*

***Supports** UCVM's intention to have all clinical residency programs⁶ combined with graduate degrees.*

***Supports** UCVM's implementation of advanced clinical and practicum training programs in fields it has chosen to emphasize.*

***Supports** the UCVM's need for financial support for graduate DVM students, interns, and residents.*

Continuing Education (CE) and Professional Development

The availability and affordability of comprehensive continuing education for the veterinary profession is essential to meet changing needs in society. As such, there is an element of public good in such programs so they deserve to be included in the mandate of the universities (as is implied in the AVMSC terms of reference).

⁶ Advanced clinical training in a medical specialty in a hospital setting

The AVMSC:

Supports UCVM's inclusion of continuing education in its mission.

Recommends that UCVM develop programs with defined outcomes to support professional development.

Recommends that UCVM seek to coordinate its continuing education and professional development activities with professional and academic organizations in the region.

Research

UCVM is committed to being a research intensive Faculty, but the development of its research program is just beginning. In keeping with its mandate, UCVM research efforts will align with the areas of emphasis of the Faculty. In particular, UCVM will focus on issues at the interface of animal and human health. In order to facilitate this research and capitalize on existing strengths at the UC, UCVM will integrate its faculty members into the existing UC health research institutes, wherever desirable. This will occur within the medical research facilities presently under construction and renovation at the UC faculty. Faculty members will also pursue purely veterinary research at the Health Sciences Complex, in the new Clinical Skills Building, and the existing Life Sciences Research Station. These objectives have guided the distribution of infrastructure funds and assignment of research space to new faculty members. The UCVM will collaborate with other institutions in research and where appropriate through the aegis of an *Animal Health Research Network* that is being proposed.

The AVMSC:

Supports the UCVM's plan to align its research efforts with the areas of emphasis of the Faculty, with attention to areas where animal and human health inter-relate.

Supports the UCVM's plan to integrate, where appropriate, its research activities with the Faculty of Medicine and to establish an integrated research infrastructure with the UC's Health Research Institutes.

Supports the participation of the UCVM in an Animal Health Research Network (see later).

Strategic Objectives for the Animal Health System

Summary

Vision: Alberta has an integrated, effective and leading edge animal health system that serves the needs of society.

The AVMSC strategic objectives for the animal health system are:

Generally

- assuring the capacity to deal with all significant issues related to health and disease in animals (farm livestock, household companion animals, fish, wildlife, laboratory animals, zoo species), especially disease prevention, detection, diagnosis, and effective response.

Specifically

- providing adequate services to rural communities and more generally enhancing capacity in food supply veterinary medicine (FSVM)* to assure animal health, food safety, market access, and competitiveness in livestock industries;
- enhancing capacity in veterinary public health (food safety, control of zoonoses);
- developing capacity to manage for ecosystem health at the community level (including wildlife/conservation medicine).

Action to achieve the strategic objectives:

Assure that the post-secondary education institutions, that are part of the animal health system, provide a spectrum of human resources (HR) that meets Alberta's needs for optimal delivery of cost effective private and public veterinary services.

Enhance laboratory and surveillance services to support food supply veterinary medicine (FSVM) and veterinary public health.

Ensure sufficient veterinary capacity to engage in and support the animal health and comparative biomedical and clinical research enterprises in Alberta.

Adopt public policies that support these strategic objectives.

Of particular concern are policies that can maintain a network of economically viable rural community veterinary practices that are needed to deliver conventional private and important public practice services.

* Food Supply Veterinary Medicine (FSVM) is a new term that encompasses all aspects of veterinary medicine's involvement in food supply systems, from traditional agricultural production to consumption.

Veterinary Practice

Overview

Veterinary medicine deals largely with health and disease in vertebrates. The majority of veterinarians are employed in private practices delivering services to owners and custodians of domestic animals. These practices variously focus their enterprise on multiple species, or confine it to one class or species of animal. The former is more common in rural communities and the latter in urban communities. In some provinces in Canada, government may provide assistance to rural veterinary practices by building veterinary clinics or by subsidizing services. Practices may comprise one or more general veterinary practitioners and or veterinary specialists, Animal Health Technologists, and other support personnel.

A significant number of veterinarians are employed in government delivering “public practice” services that are focused typically on matters related to food safety, zoonoses, foreign animal disease, environmental quality, trade, wildlife diseases, and the like.

In the recent past the bulk of public practice services have been provided by government employees. Some private veterinarians have been accredited and contracted by government to certify the health of animals in commerce, collect specimens, participate in surveillance programs, etc. In comparison to earlier times, when publicly funded control programs for tuberculosis and brucellosis were extant, this activity until recently has occupied relatively little of the private practitioner’s time nor contributed significantly and consistently to practice income. More recently, BSE and export testing have made it otherwise for some practices.

Veterinarians are also employed in commerce related to veterinary medicine, e.g. the pharmaceutical and biological industries.

Issues

In the western world, as veterinarians have increasingly opted for urban and household animals practice, there is increasing concern that the needs of rural communities and livestock industries are not being met. In part, the issue may reflect mal-adaptation of food animals practices to the changing needs of society.

Rural practice has been plagued for many years by too few veterinarians entering and/or remaining in practice^{7,8,9,10}. Recent events in the livestock industry suggest that changes in animal agriculture require recasting the problem of “too few rural practitioners” to “too few rural practices with the skills, culture and mandate” to meet the evolving needs of rural communities.

⁷ Angus Reid. AVMA/Pfizer Veterinarian /Producer Relationships Study. Jan. 1998

⁸ CVE Section, WCVM, WCVM Advisory Council, Manpower Resources of Veterinarians in Western Canada. September, 1990.

⁹ Numerous anecdotal comments from rural veterinarians attempting to employ veterinary associates

¹⁰ Diamant Marketing Group for the WCVM, University of Saskatchewan and the Saskatchewan Veterinary Medical Association. Veterinary Human Resources Planning for Western Canada. December 2003.

The lessons of BSE, WNV, FMD in the United Kingdom, chemical pollution, public concerns about food safety, and zoonoses have made clear the need for more effective public practice services to protect biological security and prosperity. The veterinary profession^{11, 12} and the wider scientific community¹³ have recognized the urgent need for increased human resources to address this situation. Essentially it is the issues and problems that have traditionally been dealt with as public practice that demand much more attention in today's interconnected world.

Recently a consortium of practitioners with food animal interests in Canada and the USA has articulated an approach to food animal practice that encompasses all aspects of veterinary medicine's involvement in food supply systems, from traditional agricultural production to consumption. It has been termed "food supply veterinary medicine" (FSVM)¹⁴. It encompasses both private and public practice services. This approach is supported by the AVMSC.

It is also apparent that the needs for veterinarians with interests and expertise in public health and ecosystem health, and more generally in public practice, have not been met in part because of lack of educational programs that emphasize these fields and a professional culture that has not given sufficient attention to changing societal priorities in the past^{15, 16}.

Adapting to the present situation will be difficult and requires not only adjustments to veterinary education but also public policy initiatives that can make rural private and public practice services more effective and attractive.

Veterinary Practice in Alberta

Overview

All practicing veterinarians in Alberta are licensed by the Alberta Veterinary Medical Association (AbVMA). "The AbVMA is the professional organization governing the practice of veterinary medicine in Alberta under the authority of the *Veterinary Professions Act*. As a self-governing profession, the AbVMA is required to perform its regulatory and professional functions in accordance with the law in a manner responsible to the public of Alberta"¹⁷.

Licensed veterinarians have a Doctor of Veterinary Medicine (DVM) or equivalent degree from an accredited school or acquired a CVMA Certificate of Qualification by examination and have passed the North American Veterinary Licensing Examination (NAVLE).

¹¹ Hoblet KH, Maccabe AH, Heider LE. 2003. Veterinarians in population health and public practice: Meeting critical national needs. *J Vet Med Educ* 30:287-294.

¹² AAVMC Task Force. 2003. Emergency Needs in veterinary human resources. American Veterinary Medical Colleges, Washington, DC 14pp.

¹³ National Research Council. 2005. Animal health at the crossroads: Preventing, detecting and diagnosing animal diseases, National Academies Press. Washington, D.C.

¹⁴ http://www.avma.org/public_health/fsvmc/fsvmc_22.pdf
http://www.avma.org/public_health/fsvmc/fsvmc_toc.asp

¹⁵ Lees V. W. 2005. Has veterinary medicine lost its voice? *Can. Vet.* 46: 649-654.

¹⁶ Leighton F.A. 2005. Veterinary medicine and the lifeboat test. A perspective on the social relevance of the veterinary profession in the twenty-first century. *J Vet Med Education* 31: 329-333.

¹⁷ Alberta Veterinary Medical Association. 2007. Directory, p.1

All veterinary services performed in Alberta must be through a facility that is registered with and inspected by the AbVMA.

The number of veterinarians added annually to the AbVMA register has increased from about 50 to over 100 over the past 10 years. This indicates there is a substantial influx of veterinarians who have not been resident in Alberta previously.

There are approximately 1,150 practicing veterinarians in Alberta working in private practices (980), academia (41), federal government (40), provincial government (20), and industry (23). Some veterinarians (28) residing outside of Alberta maintain a license to practice here.

Alberta has approximately 390 private veterinary practices of which 18% confine their practice to food or large animals. A further 37% offer multi-species services for food animals, horses, and small animals. Therefore, about 55% of practices will serve owners of food animals and horses. The remaining 45% are exclusively devoted to small animals and are located in urban centres.

Small animal practice

Despite the substantial recruitment of new graduates with long-term commitment to this sector, demand is strong and is expected to remain so.

Large animal practice

Of the 215 practices that offer large animal services, approximately 45% comprise a single veterinarian, 21% two veterinarians, 25% three to five veterinarians, and 9% are practices with from six to thirteen veterinarians.

Some single person practices provided specialized or programmed services that can be scheduled. In these cases, providing out-of-hours emergency work and location of the practice are not pivotal issues.

A large majority of rural practices provide services for small animals and in so doing meet the needs of the community and also secure income that may be essential to making a practice economically viable.

While private practice services to rural communities can be delivered from urban centres, Edmonton and Calgary are of a size that makes this uncommon. On the other hand, smaller cities and bedroom communities for Edmonton and Calgary do host practices that deliver large animal services.

Because nearly 70% of practices are comprised of only one or two veterinarians, it is not surprising that many of these individuals may find it difficult to provide services around the clock seven days a week. It reasonable to believe this is a factor that at least in part accounts for a high rate of attrition from practices offering food animal services.

Over a longer period, rural practices have either had difficulty in recruiting associates or retaining their services. The high rate of attrition has been ascribed to lifestyle, economic, and demographic circumstances that make long-term commitment to this branch of veterinary medicine less attractive than other career options open to veterinarians.

Alberta's need for a more stable and assured system for delivering food supply veterinary medical services mirrors that more widely in Canada and the USA. Securing stable and adequate manpower for this sector was one of the factors that led to the establishment of the UCVM.

Specialty veterinary practice

Canadian veterinarians and professional associations have used the American Veterinary Medical Association (AmVMA) specialty board system for recognizing both specialty domains and specialists. At present, the AmVMA recognizes 20 different medical disciplines or species practice specialty boards/colleges.

Typically, specialization requires five years of clinical experience, most of it focused in the field of interest and usually mentored by an existing specialist, published evidence of scholarship and passing a rigorous examination. Successful candidates become "Diplomates" of the appropriate board/college.

Alberta has relatively few veterinarians (39) with specialty education, less than 3% of the registered practitioners. Only 11 of the 20 recognized specialty boards/colleges have Diplomates in Alberta. The number of Alberta veterinarians in various boards/colleges ranges from 1-10 *viz.*: American Board of Veterinary Practitioners (2 in companion animals); Poultry Veterinarians (1); Theriogenologists (5); Internal Medicine (6); Pathologists (9); Surgeons (10); Radiology (2); Toxicology (1); Ophthalmology (2); Preventive medicine (2); and Anesthesia (2). Most are located in small animal practices in Calgary and in the UCVM.

By contrast, in the USA about 10% of the veterinary profession has specialist qualifications. It seems reasonable to conjecture that the quality of veterinary practice in Alberta would be improved by having more veterinarians with specialty qualifications.

Public practice veterinary services

Alberta Agriculture and Food (AAF) provides diagnostic and surveillance services associated with animal health and food safety to veterinary practices and the livestock industry.

The Canadian Food Inspection Agency (CFIA) provides public practice veterinary services associated with food safety, international trade, and foreign animal diseases. A substantial number of veterinarians have historically been employed by government for this purpose. CFIA expects to recruit significant numbers of new graduates to replace retirements and staff evolving programs.

The domain of wildlife health and disease is generally covered in the mandate of Alberta Sustainable Resource Development. The Canadian Cooperative Wildlife Health Centre (CCWHC) is a loose affiliation of veterinary faculties and institutes supported by federal and provincial agencies to provide diagnostic and clinical research services required to deal with wildlife health and disease issues. One of its nodes is now located at the UCVM. Wildlife disease per se or wildlife as vectors of domestic animal and human disease has emerged as a major concern arising from the increased connectedness in today's world.

Presently neither Alberta Health nor Regional Health Authorities have employed veterinarians. In contrast, the Public Health Agency of Canada (PHAC) is increasingly employing veterinarians with advanced qualifications in epidemiology. With the increasing importance of zoonoses and food safety, it can be expected that veterinarians who specialize in public health will find employment with Alberta public health agencies.

The provision of veterinary services to zoo animals has emerged as a specialty for veterinarians. The Calgary Zoo is a significant partner in the UCVM Distributed Learning Community.

Refocusing and Restructuring the Delivery of Rural Veterinary Services

Present Trends in the Livestock Industry

Present trends in the livestock industry make the assurance of rural veterinary services even more precarious than heretofore and portend the need for substantial change in the system of providing veterinary services to rural communities. It seems prudent to anticipate the following:

The number of commercially viable livestock farm enterprises will decrease in number, increase in size, and be served by fewer veterinarians who are specialized in health management of a given class of livestock.

Livestock will continue to exist on many rural hobby farms and acreages (e.g. there are 15,000 small farm poultry flocks), where the owner's income derives largely from off-farm employment, any one of which could be a point of entry for exotic disease or outbreak of indigenous disease that in turn could be a threat to the livestock industry or public health. Veterinarians focusing on private multi-species as well as public practice services will serve this constituency.

Small enterprises serving niche markets (e.g. organic production) may thrive.

Animal Health Technologists and professional veterinary associates (e.g. baccalaureates) will play a larger role in delivering technical veterinary services and those associated with audit and verification, respectively.

Rural communities will continue to expect private veterinary services for companion animals.

Community standards for animal welfare will become increasingly stringent and require access to veterinary services.

Public practice services will be necessary to meet consumer expectations for food safety and animal welfare, international standards associated with market access, etc.

Veterinary practices will play a much larger role in community education and extension.

Communities will expect higher standards of environmental quality in association with livestock enterprises.

Environmental and interface issues among domestic animals, wildlife, and people will become increasingly important.

World demand for livestock products will increase with the result that animal health and trade issues will become increasingly important.

Global warming will have as yet unrecognized effects on animal health and livestock production.

Rural Community Veterinary Practice (RCVP)

Alberta's animal health system faces two crucial challenges: 1) **maintaining a network of rural practices** that are essential in preventing, detecting, diagnosing, and responding to problems related to animal health; and 2) **delivering adequate new public practice services** needed to cope with threats to animal health and animal products that impact market access, public health, and the quality of the environment.

The AVMSC from its inception has believed that the strategy envisaged in its mandate must strengthen and sustain animal health services to rural communities if Alberta is to have "an integrated, effective, and leading edge animal health system that serves the needs of society." The concept of food supply veterinary medicine (FSVM) encompasses all aspects of veterinary medicine's involvement in food supply systems, from traditional agricultural production to consumption and describes the domain that needs particular attention. The Committee sees this concept as an important element in Alberta's promotion of rural development.

Increasing threats to biological and economic security make it more important than ever to have a strong network of rural veterinary practices with the human resources educated to deal with the new world realities that impact trade and public health *to wit* deliver effective FSVM. The ability to rapidly detect and diagnose new disease outbreaks is the single most important factor in limiting their impact. Maintaining a network of veterinary practices to serve the needs of rural communities and the livestock industry is arguably the single most important problem facing those responsible for animal health in Alberta. This was one of the important factors that led to the establishment of the UCVM.

The Committee has considered in some detail the merits of linking the maintenance of viable rural practices and the delivery of public practice services in what is being called "rural community veterinary practice" (RCVP)¹⁸. Essentially, it envisages strengthening the viability and utility of rural practices by giving them a much larger role in delivering public practice services that respond to community needs in addition to their traditional role in mixed animal practice. The AVMSC recognizes the delivery of veterinary services is entering a period of transition and that there can be a variety of approaches to addressing how animal health services are provided to the public.

Given the cyclical nature of the economics of the livestock industry, the increased employment of rural veterinary practices to deliver essential public practice services may be the only realistic option to stabilize and maintain this element of the animal health system.

¹⁸ Nielsen NO, Evans B, King LJ. 2006. The Concept of Rural Community Practice. J. Vet. Med Educ. 33:549-553

Whatever happens it is reasonable to expect that public policy must recognize that it is in society's interest to have an animal health system that is not only more aware of and responsive to threats to human, animal, and ecosystem health but also adept at fostering effective health management. Rural veterinary practice can adapt to this expanded role and accept wider responsibility to the community as well as to the animal owner. The high level of trust enjoyed by local veterinary practitioners in the community, an essential element in any public program, is an added benefit of having local veterinary practices deliver public practice services.

Under any circumstance, government would continue to focus on policy, program formulation and oversight, and coordination of all elements in the animal health system where appropriate.

RCVP Services

There follows a list of services that are envisaged as being supplied by RCVP:

Minimum conventional rural multi-species practice services

- Comprehensive veterinary service for commercial cow-calf and dairy enterprises
- Comprehensive veterinary service for production animals in small enterprises
- Emergency services for swine producers, and feedlots
- Primary care for household pets and horses
- Capability to recognize named diseases or those that are subject of government or industry control or surveillance programs in any species (first responders)

Desirable or possible public practice services

These would be encouraged or mandated by government or industry and related to animal, public, and ecosystem health that are envisaged as being needed now or in the future.

Surveillance

- Active targeted surveillance and sentinel programs
- Passive surveillance
- Diseases in the livestock industry
- Diseases in hobby farm animals (e.g. back yard poultry)
- Foreign Animal Disease (FAD) early detection

Certification of animals

- Animal identification
- Age verification and other export standards and requirements
- State of pregnancy
- Tracking and compliance
- Herd inventories and tracking
- Process tracking (was product really grass-finished, etc.)

Certification of animal products

- Meat Inspection

Development/audit and verification of certification programs including:

- On-farm food safety
- Organic certification
- Herd certification based on management or production practices (e.g. feeding regimes)
- Herd or flock disease-free certification (e.g., TB, CWD, EBL, Johne's disease, etc)
- Emerging environmental and welfare certification (e.g. Freedom Foods)
- Animal welfare

Disease investigation

- Animal disease
- Public health, zoonoses, food safety

Emergency response

- Surge capacity in FAD control
- Toxic spill/release events
- Natural disaster and animal rescue

Ecosystem health management

- Monitoring wildlife mortality
- Recommending and monitoring indicators used in managing for ecosystem health
- Advising on environmental farm plans and their integration at relevant regional scales
- Disposal of carcasses and specific risk material (SRM)
- Facilitation of public discussions of choosing sites for intensive livestock operations
slaughter plants, waste management facilities, etc. where expertise in animal
diseases and eco-health is needed

Client and community education and extension

- Animal welfare
- FAD recognition
- Risk communication
- Animal health management
- On-farm bio-security

The RCVP Team

It is clear that to be cost effective the delivery of veterinary services must involve veterinary paraprofessionals more than has been the case heretofore.

The range of human resources educated in the years ahead for the animal health system should be commensurate with the range of needed private and public practice services so that the appropriate level of skill and competency can be matched to that task at hand in a timely and cost effective manner. Consequently, the AVMSC concept of rural community veterinary practice envisages one that includes veterinarians, technologists, and other professionals working as an animal health team. This would include AHTs skilled in medical technology and baccalaureates educated in disciplines focused on public practice services such as food safety, nutrition, conservation biology (ecosystem health), and animal health management.

By having a full spectrum of animal and veterinary public health service providers in the RCVP, it should be possible to achieve optimal cost-effectiveness. Veterinarians, as team leaders, must have both the education and the mind-set commensurate with this broader role.

Summary

The concept of rural community veterinary practice combines traditional multi-species veterinary practice with a suite of public practice services delivered by an expanded team of animal health professionals and technologists. The AVMSC believes this approach has the potential to make rural practice more attractive to the RCVP team from economic, lifestyle, and job satisfaction perspectives and provides a cost effective approach to providing new and expanded public practice services essential for the province's and nation's biological and food security.

The AVMSC:

Recommends that Alberta Agriculture and Food and those presently participating with it in developing an animal health strategy for Alberta consider the merits of implementing the concept of **Rural Community Veterinary Practice (RCVP)**, as a means of assuring that rural Alberta continues to have available and affordable veterinary practice services that are essential for maintaining animal, public, and ecosystem health and promoting and safeguarding economic prosperity.

Recommends that research be conducted to evaluate the economic merits of new systems for supporting rural veterinary practice and delivery of food supply veterinary services.

Recommends contracting more public practice services provided wholly or in part by government to rural practices.

Enhancing Diagnostic and Surveillance Services

The AVMSC applauds the cutting edge Alberta Veterinary Surveillance Network being developed by AAF. The recent adoption by Australia of Alberta's approach is a testimony to its value. It is a good example of a public practices service executed with the contracted assistance of the food animal practices. This and other surveillance services that can be provided by AAF not only help protect animal health but also provide a superb opportunity for field research in collaboration with the academic community to make the animal health system even stronger.

However, Alberta cannot have a leading edge animal health system without strengthening its capability in the food animal sector to detect, monitor, or verify disease by necropsy examination of a broad spectrum of case material. In veterinary medicine, especially in food animals, the quality of veterinary clinical practice is maintained by routine post mortem investigation of cases. Economics usually does not allow sophisticated imaging and clinical diagnostic methodology to make or verify diagnoses. There is anecdotal evidence to suggest that the quality of clinical practice in Alberta has eroded since the closure of what was a world-class diagnostic system.

Effective diagnostic pathology requires facilities for full necropsy and laboratory examination and access to specialized expertise to conduct analysis of collected samples. It would be highly desirable for Alberta to have a diagnostic laboratory that meets the accreditation standards of the American Association of Veterinary Laboratory Diagnosticians. This organization includes Canadians in its membership and has emerged as the leader in setting veterinary diagnostic standards for North America.

The economics of food animal practice do not allow for the more sophisticated services needed by the livestock industry. Some of the cost must be covered, recognizing the public goods value of such services. One way or another Alberta needs to strengthen its veterinary profession's capacity in diagnostic services especially of food species.

In contrast, the economics of small animal practice can reasonably be expected to be adequate to support routine, diagnostic laboratory procedures except where disease is of particular concern from public health, educational, or research perspectives.

The AVMSC shares with the AbVMA the hope that the establishment of the UCVM can serve as a catalyst to establish more effective diagnostic services for the livestock industry.

The AVMSC:

Supports the continued development of the Alberta Surveillance Network (ASN).

Recommends the development of diagnostic pathology and laboratory services to support the food animal, equine, and other animal industries and to protect human health in Alberta. These services should be capable of meeting the essential requirements for accreditation of the American Association of Veterinary Laboratory Diagnosticians¹⁹ (AAVLD).

Recommends that any new diagnostic support services capitalize on existing strength in Alberta such as expertise available at the UCVM or provided through collaboration with other regional diagnostic agencies.

¹⁹ AAVLD accredits diagnostic laboratories in North America. <http://www.aavld.org/mc/page.do?sitePageId=33930>

Educating Human Resources for the Animal Health System

Post-Secondary Educational System Overview

The components of the post-secondary system²⁰ for educating human resources for the optimal delivery of veterinary and animal services in Alberta are the universities, colleges, and technical institutes as follows:

Universities

University of Calgary (UC)

The UC has undergraduate programs (e.g. science) where students can prepare themselves for admission to DVM programs. The Faculty of Veterinary Medicine will be accepting students for September 2008. The Faculty of Veterinary Medicine, in collaboration with Olds and Lakeland Colleges, is developing a Bachelor of Animal Health Sciences program. The UC provides many opportunities for graduate education and these opportunities are continuing to grow as UCVM develops its programs. In addition to the aforementioned programs, several other Faculties contribute to the animal health research enterprise at the UC. A more complete description of the UCVM is on pp. 17-23.

University of Alberta (UA)

The Faculties of Agricultural, Life and Environmental Sciences (ALES), Medicine, and Science and the School of Public Health have roles in the animal health education and research system.

Undergraduate students may meet pre-veterinary requirements in a number of programs, in BSc in Agriculture (Pre-Vet and/or Animal Science major) to which many are attracted, BSc Environmental and Conservation Sciences (Conservation Biology major), BSc (Animal Biology), and BSc (Infection and Immunity) programs. A program proposal for a BSc in Animal Health has been submitted to Advanced Education and Technology for review for Fall 2008.

All faculties and schools offer graduate research degrees through a number of departments including Agriculture, Food and Nutritional Science, Biological Sciences, Medical Microbiology and Immunity, and Rural Economy. Non-thesis and course-based masters degrees are offered in ALES and the School of Public Health.

Research programs at university faculties and institutes cover a wide range of areas relevant to the evolving scope of veterinary medicine. The University of Alberta is a major partner in the Alberta Veterinary Research Institute (AVRI), the Alberta Prion Research Institute and is home to the Alberta Cooperative Conservation Research Unit and the Rural Development Institute.

Animal production and health research covers a range of disciplines and commodity groups: animal nutrition and metabolism, welfare, physiology, meat/muscle biochemistry, population genetics, and genomics/proteomics/metabolomics. This research is supported by infrastructure available through the Biotechnology Centre, the Edmonton Research Station (including dairy, poultry, swine, and metabolic units), and Kinsella Research Station (including the Precision Ranching Centre).

²⁰ <http://www.advancededucation.gov.ab.ca/college/postsecsystem/postsecinst/postsecinst.asp>

Discovery Place allows integrated studies of all aspects of pork and poultry production and processing. Production research is complemented by a strong and long-standing program in food quality and safety and placed in context of global markets by research themes of the Department of Rural Economy.

The Agricultural Waste and Emissions Management Research Group studies management of bio-residuals and emissions streams from livestock production operations. Specific initiatives evaluate greenhouse gas and odour emissions, nutrient content of bio-residual streams, pathogen survivability, heavy metal concentrations, and pharmaceutical persistence.

University of Lethbridge (UL)

The UL provides the opportunity for undergraduate students to complete prerequisite course requirements for admission to the DVM programs as part of a BSc program. It also offers opportunities for postgraduate studies at the MSc and PhD level in research of relevance to veterinary medicine, e.g. in behavioral neuroscience, biosystems and biodiversity (water resources), and biomolecular science. The university has broad interest in human health and agriculture or put another way, the interface between people and agriculture. It has a School of Health Sciences in its administrative structure. The proposed Animal Health Research Network (AHRN) will invite UL to participate as a significant component of its program.

University of Saskatchewan (US)

The Western College of Veterinary Medicine (WCVM) serves western and northern Canada, viz. Alberta, British Columbia, Manitoba, Saskatchewan, Northwest Territories, Nunavut, and the Yukon.

The WCVM's stated mission is "to provide veterinary education in western Canada and to act as a centre of veterinary expertise and research." Its education program includes professional undergraduate education of veterinary students; graduate education for veterinarians and biological scientists at the diploma, masters, and doctoral levels; continuing education for veterinarians; education of animal health students (in collaboration with the community colleges) and extension education for the public on veterinary issues.

The college provides leadership and consultative services to the veterinary profession and the public in the diagnosis, treatment, and prevention of disease in domestic and wild animals; livestock production and management; animal welfare; the occurrence and incidence of disease in animals, and related environmental issues.

As part of its mission, the college conducts research in veterinary sciences on food animals, companion animals, laboratory animals, and wildlife through fields that in broad terms include the clinical and biomedical sciences, comparative medicine, livestock production and management, animal welfare, public health, and environmental health.

While the research program of the college ranges widely, it is particularly strong in toxicology, animal reproduction, immunology, and infectious diseases. The US has several research facilities of relevance to animal health viz. Toxicology Centre, the Goodale Farm (facilities for cattle, sheep, deer, and elk), the Prairie Swine Centre, and the Canadian Light Source, a unique facility that can accommodate research on all sizes of animal.

Presently the WCVM accepts a class of 73 students in the DVM program and will continue to enroll 20 from Alberta.

The WCVM is completing a major addition to its physical plant, in the form of additional research and Veterinary Teaching Hospital (VTH) facilities. The latter will continue to be unique resource in western Canada.

Vaccine and Infectious Disease Organization (VIDO). The University of Saskatchewan is home to VIDO, which is a world leader in the research and development of vaccine and immunotherapeutic technologies for livestock and humans. It is credited with five "world firsts" in animal vaccine research, and is expanding into human health applications. Current research interests include vaccines against a number of food-borne organisms, and novel vaccine delivery systems including needle-free methods. VIDO is a financially self-reliant, non-profit organization owned by the US and operates with substantial support from the Governments of Alberta and Saskatchewan as well as Government of Canada and industry competitive grants. It collaborates extensively with external institutes and companies and provides a rich training environment for graduate students and others. VIDO's planned Intervac facility will include level 3 containment for large animals.

Colleges and Technology Institutes (CTI)

The CTI that train Animal Health Technologists (AHTs) are Olds College, Lakeland College, and the Northern Alberta Institute of Technology (including the Fairview Campus). The AHT program spans two years. The CTI have about five to six times more student applicants than can be accepted. They have a total enrolment of 235. Recently Olds College has introduced a program that makes it possible to take the AHT program by distance education. This development is also expected to be useful for AHTs who are returning to the workforce following absence of a few years.

Many of the CTI offer courses needed to qualify for admission to the DVM programs at the UCVM and the WCVM. Transfer of course credits among institutions within Alberta is facilitated by the Alberta Council on Admissions and Transfer²¹.

Doctor of Veterinary Medicine (DVM)

Overview

University programs leading to a DVM degree in Canada and the USA require a minimum of six years of study comprising at least two years of specified pre-veterinary education followed by four years in a DVM program accredited by the CVMA/AmVMA Council on Education. In practice, the average student gaining admission to a DVM program will have four years of university education and many have baccalaureate and graduate degrees. The net result is that the average DVM graduate will have spent eight years at university. While the AVMSC is aware that pre-veterinary education, admission procedures, and veterinary curricula have been the subjects of intense study by academia, it believes there are opportunities to create a process that is more attuned to the both the student's and society's interests.

²¹ <http://www.acat.gov.ab.ca/index.asp>

Licensing

With the continual growth in knowledge and sophistication of veterinary medicine, it is increasingly difficult to prepare students in any one field to the level of an independent practitioner in the DVM curriculum. While new DVM graduates must pass the NAVLE to qualify for licensure, most benefit from a further period of mentored clinical experience in the veterinary field of their choice to acquire the skills expected of an independent practitioner. Present licensing and educational norms are directed at graduating and qualifying a generalist. The AbVMA is presently contemplating the merits of 1) requiring new graduates to undertake a period of mentored experience in a practice before granting full licensure and 2) designating licenses to specific fields as means to ensure greater competence.

Recruiting veterinary students

The AVMSC considers recruitment of veterinary students from all walks of society to be important. This helps ensure a strong veterinary profession that is responsive to a wide spectrum of needs in society. Concern has been expressed in some quarters that the number of students applying for admission to DVM programs has decreased in relation to earlier times. In part, this may reflect a mistaken impression about the difficulty in gaining admission and perhaps the unfamiliarity with the range of careers open to graduates. The Association of American Veterinary Medical Colleges (AAVMC) has recommended “expansion of recruitment through publicity of career opportunities, increased awareness of the scope of the profession, promotion of the image of veterinarians, and an appeal to the full range of diversity in society.” Public relations programs of the CVMA can take the lead in this endeavor.

The AVMSC:

***Recommends** that the veterinary profession take the lead in recruiting prospective students from all walks of society.*

DVM Admissions Processes

The goal of the UCVM admissions process is to attract and admit highly qualified and diverse Albertan applicants to the DVM program. The admissions policies and procedures have been built upon the mission of UCVM and on best practices. The WCVM’s process is similar and has the benefit of over 40 years of experience.

Present plans for the UCVM DVM admissions process require that students seeking admission secure a minimum standing in 10 specified required subjects. WCVM has 11 required subjects, with no minimum academic standing in those subjects. All but one of the subjects (English) at both colleges deal with basic science and all are available at most colleges and universities in Alberta and require a minimum of two full years to complete. For students who wish to gain admission after two years, both colleges require at least two full academic years. For students who hold degrees, exceptions may be made by UCVM under some circumstances.

UCVM considers four courses per term to be a full course load. By comparison, students who intend to apply to the WCVM are expected to have taken a full course load of five courses per term. Alberta's official definition of full time study is three courses per semester. UCVM has defined a full course load to be four courses per semester to ensure that students are able to meet the academic rigor of the DVM program and yet this enables students to meet requirements while engaging in extracurricular activities or part-time work. UCVM will consider admission of a limited number of students who have completed at least three years of study at the time of application and have met all academic requirements except the requirement for two years with four courses per semester.

The additional courses that students take during their general undergraduate program may be used to explore areas of interest to the student and to broaden their educational background. Because many students will not be admitted to the DVM program, students are encouraged to prepare themselves for alternate careers while still enhancing their knowledge of areas relevant to their career interests. Since many students may choose to complete the course requirement for admission to the DVM over three years, or be unsuccessful in their first attempt to secure admission, they are in a position to take courses in their field of interest in their third and subsequent years of study while still aspiring to gain admission. The benefit in the admissions process of additional university studies (courses) that are undertaken during or in subsequent years, including acquisition of a degree(s), will be the potential to improve the student's academic record, to increase their knowledge in areas relevant to their career interests in the veterinary profession, and their effect on performance in interviews and an on-site written essay.

There are many programs that provide a suitable learning environment for students to complete their required courses. Given the desire for diversity in entering students, it is anticipated that students will come from a variety of programs and a range of institutions. The proposed BScAH programs at U of A and U of C (described later) are examples of potential programs. However, many other programs also provide suitable environments in which to complete the required courses and, given the desire for diversity in entering students, it is anticipated that students will come from a variety of programs and institutions.

The AVMSC believes that students who acquire education and experience in high priority fields of veterinary medicine should have this fact weigh in their favour in the admissions process, provided they have an academic track record that is consistent with success in the DVM program. The important issue is to appropriately assess the contributions of such activities in the admissions process. Assessing academic performance is one necessary component of the admissions process as it is the most significant predictor of future academic performance. To assess the non-academic components a system must be devised to measure identified competencies important to the DVM program and the profession. Each veterinary college develops its own method to assess this suitability.

It is the intent of the UCVM to set up a fair, reliable, and valid process that takes into account the desire to accept a diverse group of students who, upon completion of the program, will contribute to UCVM's mandate. UCVM has elected to use the multiple mini-interview (MMI) process that provides a more structured and objective interview process. The MMI uses a series of short, structured interviews. Each mini-interview provides a candidate with two minutes to read a question/scenario and mentally prepare before entering the interview room.

Upon entering, the candidate has eight minutes of dialogue with one interviewer/assessor (or, in some cases, a third party as the interviewer/assessor observes). At the conclusion of the interview, the interviewer/assessor uses the next two-minute period to evaluate while the candidate moves to the next scenario. This pattern is repeated through a circuit of 10 – 12 stations, taking 100 – 120 minutes. With this approach, an objective assessment of the applicant is obtained and it is possible to explore the attributes of the candidate in more depth, including their knowledge and understanding of the veterinary profession, animal industries, and the nature of the program at UCVM.

The WCVM also uses a structured interview process that has been extensively tested to assess non-academic characteristics of applicants. It should be noted that WCVM, as all long established veterinary faculties, has had the benefit of both extensive experience with the process as well as the collective wisdom of the more than 30 veterinary faculties in the USA and Canada who meet annually as the Association of American Veterinary Medical Colleges (AAVMC) to share experiences with the admissions processes.

The AVMSC:

Recommends that UCVM and WCVM consider harmonizing course prerequisites for admission to DVM programs.

Deferred admission associated with completion of additional degrees

The admission of some students after two years into UCVM or WCVM means that they will not complete their undergraduate degrees. In some cases, it may be to the advantage of the student and to their home institution to complete an undergraduate degree. For example, completion of an undergraduate degree may permit students to enroll in a graduate degree while completing their DVM degree or it may allow them to gain additional knowledge in a particular area that will serve them in their veterinary career (e.g. production animal health). While all universities have programs that meet these criteria, the UA Faculty of ALES plans to have specific undergraduate and graduate program resources that can be useful in educating students who are motivated to become veterinary specialists in one of the food animal species.

There are a number of ways that students could gain access to such opportunities and programs. Students who are admitted to the DVM programs after two or three years could request a deferral of their admission in order to complete another year or an undergraduate degree program. Students would need to demonstrate to the satisfaction of the veterinary college and the baccalaureate granting faculty that they were following a program that would benefit their long-term career goals. In order to facilitate completion of degrees, home institutions for the undergraduate program could give credit for the first year of the DVM program in order to award baccalaureate degrees.

Similar consideration could be given to permit completion of graduate degrees.

The AVMSC:

Recommends *granting deferred admission to the DVM program to allow students to undertake further animal health education that will be of particular value in a field of veterinary medicine.*

Recommends *granting fourth year equivalency for the first year of the DVM program in the proposed BScAH program and potentially in other BSc degree programs where the DVM program can be deemed similarly acceptable.*

Enrolment

Presently the WCVM accepts 20 students annually from Alberta, a quota, set by the Ministry of Advanced Education and Technology, that has existed since the late 1960s. The UCVM will have an initial class size of 30. As a consequence in 2012, 50 new graduates from Alberta will be added annually to the veterinary profession.

By 2012, the population of Alberta will have more than doubled since the establishment of the WCVM. Therefore, opportunity for a veterinary education for Alberta students is now about the same as it was 40 years ago. Because of the limited opportunities for admission in the intervening years, it was not uncommon for Alberta students to seek and secure admission to DVM programs in other countries.

Both the UCVM and the WCVM will have the potential to increase class size in response to demand for more graduates. Enrolment should fully utilize the investment in veterinary education infrastructure and capture economies of scale. It would be prudent to establish some mechanism to periodically review and recommend enrolment targets. The faculties collectively also have the opportunity to provide programs to enable qualified veterinarians who are landed immigrants to meet knowledge and skill requirements for licensure. The AbVMA would be a logical agency to lead an appropriate process.

It can also be anticipated that at some point in the future the introduction of the option of designated licensure of practicing veterinarians may prompt the establishment of quotas for specific fields within veterinary programs. This task may be added to the process of enrolment review and recommendation.

It is reasonable to conclude that the total enrolment of veterinary students in Canada and the USA has been insufficient to meet demand for veterinarians and that undergraduate programs have not been modified to more adequately address societal needs until recently. Veterinary educators at the UCVM and the WCVM (which has just revised its curriculum) have recognized these problems and are taking steps to address these issues.

The AVMSC:

Supports providing for an annual enrolment of at least 50 Alberta veterinary students, 30 at UCVM and 20 at the WCVM, as a benchmark that should be re-evaluated regularly in a process led by the AbVMA 1) to assure needs of the province and the nation for veterinarians are being met, and 2) to utilize capacity to expand DVM enrolment at both UCVM and WCVM as circumstances warrant.

Subsidizing students to focus on high priority societal needs

Presently it is left to veterinary students to select the field of veterinary medicine they wish to enter following graduation. Typically the undergraduate experience and the strong demand for graduates in small animal practice has motivated increasing numbers of DVM students to enter this field. As a consequence the need for veterinarians in several high priority areas is not being adequately accommodated. Increasing absolute enrolments in DVM programs and strengthening undergraduate curricula in high priority fields can help address this issue.

Adapting to the present situation will be difficult and requires not only adjustments to veterinary education but also to public policy initiatives that can make rural and public practice services more effective and attractive.

The AVMSC believes that DVM educational system can play a key role in needed change through both student selection, and curricular adjustments and financial incentives for students who aspire to enter fields with high societal priority. The use of financial incentives for students who commit to specific employment for a period of time in high priority areas after graduation has been effective in other professions or jurisdictions in ameliorating paucity of human resources. Similar programs are merited in veterinary medicine for Alberta students.

The AVMSC:

Recommends providing financial incentives for students committed to entering fields with high societal priority like food supply veterinary medicine (FSVM).

International students

Universities as a general rule see merit in accepting international students because it serves to educate and broaden the outlook of indigenous students. Also it has become particularly important as a response to globalization. It should be noted that the control of disease of importance to Canada may depend in part on effective programs in other parts of the world. In veterinary medicine and agriculture, international students are usually accepted at the level of graduate education. In some cases, foreign veterinary graduates have been accepted into Canadian programs with advanced standing.

The AVMSC:

Supports enrolling international veterinary students in graduate programs or with advanced standing in DVM programs.

Assisting International Veterinary Graduates to Qualify for Licensure

In order for internationally trained veterinarians who have not graduated from an accredited veterinary faculty to be eligible to acquire a license to practice they must pass 1) the NAVLE examination that is written by all North American veterinary graduates and 2) a standard clinical competency examination approved by the National Examining Board (NEB) of the Canadian Veterinary Medical Association. The latter examination spans several days and involves actual clinical cases. In Canada, it has been administered by faculty members at one of the nation's veterinary colleges. It is a time consuming and resource intensive process and as a consequence the available capacity to administer the examination is limited.

Programs that are tailored to help prepare international veterinary graduates to pass these NEB examinations are needed, albeit they vie for limited resources. Post-secondary institutions can play an important role in providing education and practicum training that will assist immigrants in passing the NAVLE and qualifying for licensure in Alberta.

The AVMSC:

Recommends that the UCVM and WCVM allocate whatever capacity is available to 1) prepare international veterinary graduates to have the competence to pass the National Examining Board (NEB) clinical competency examination, and 2) administer such examinations for the NEB.

Enhancing DVM Programs in a Field of Veterinary Medicine

The Foresight Report prepared by the AAVMC (2007)²² has recognized that it is no longer possible to prepare veterinary students adequately for entry to all the major fields of veterinary medicine. It supports the establishment of designated licensing and enrolment quotas for specific fields. While it is unlikely this will occur immediately, it does document the issue. The AbVMA is presently considering the merits of “graduated” as well as “designated” licensure and both the UCVM and the WCVM are in a position to accommodate these eventualities.

Plans to give DVM students at both the UCVM and the WCVM more opportunity to elect courses in their fields of interest will be helpful in enhancing competence in a particular field at graduation. This opportunity can be further enhanced by excusing from compulsory courses, DVM students who have successfully completed equivalent courses in the pre-veterinary studies.

While the pre-veterinary and DVM program at most veterinary colleges requires a minimum of six years to complete, the present average period of study taken by students is eight years. It would be desirable to prepare most students to a level of competence commensurate with independent practice in their field of interest by making better use of the two years of study that are essentially discretionary. This could be accomplished either in pre-veterinary baccalaureate degree programs (e.g. BScAH) or in postgraduate studies for students who have completed their studies in six years, or some combination thereof.

²² The Foresight Report: Envisioning the Future of Veterinary Medical Education. 2007 J. Vet Med Educ. 34:42pp.

Students aspiring to gain admission to the DVM program and to acquire advanced competence in one of the fields of veterinary medicine could be granted deferred admission based on their academic performance at the end of two years of study as described earlier. At this point, they could continue in a baccalaureate program jointly tailored to their aspirations by the institutions concerned. Assuming continued satisfactory performance, they would be granted admission to the DVM program after six terms of study. Then, if the first year of the veterinary program could be considered equivalent to the final year of a BSc program, students can be granted the BSc degree and qualify for admission to graduate studies and thereby devote the three summer sessions of the DVM program to gaining expertise in their chosen field of emphasis.

Under any circumstance, summer sessions offer further opportunity to provide education to better prepare students in pre-veterinary and DVM programs for a career in a specific field. Completion of undergraduate programs prior to the DVM program may also enable students to enrol in concurrent graduate programs that run through the summer months and continue after the completion of the DVM degrees. Where such programs involve two universities, they would need to be developed jointly and approved at each institution. UCVM is currently developing its own graduate programs and is considering a variety of program options for students.

The AAVMC is mindful that most if not all North American veterinary colleges cannot hope to excel in all fields of veterinary medicine and are urging its members to identify areas to emphasize. If this admonition is taken seriously, some more formal rationalization of programs between the UCVM and WVCVM could be desirable. At this point, the UCVM has declared its intent to avoid unnecessary duplication and enhance complementarities with the WVCVM.

The AVMSC:

Recommends cooperative program development between UCVM and other institutions that are planned to make optimal use of BSc, DVM, and graduate degree or diploma programs to provide new graduates with advanced skills in high priority fields of veterinary medicine e.g. food supply veterinary medicine.

Recommends collaboration among various post-secondary institutions involved in animal health to capitalize on opportunities to share perspectives, expertise, and physical resources.

Supports maximizing opportunity for DVM students to gain credit for courses taken in other programs and institutions that enhance knowledge and experience in the field of veterinary medicine they wish to emphasize.

Bachelor of Science in Animal Health (BScAH)

At present, no Canadian university offers a baccalaureate program focused on animal health. It is recognized that degrees in animal science and some biological disciplines provide education that is highly relevant to animal health and have existed for many years.

The AVMSC has devoted substantial effort to considering the merits of establishing a new baccalaureate degree in animal health science at the University of Calgary and the University of Alberta.

It fostered the development of a joint proposal by the two universities for a BScAH degree and supported their plan to involve the colleges and technical institutes in this Campus Alberta initiative.

The development of the BScAH at both UC and UA provides a means to enhance the student's knowledge and experience in specific subjects that pertain to livestock agriculture, to animal health, and to biomedical science. Both programs aspire to attract rural students.

As discussed earlier, the Committee sees merit in granting equivalency of the first year of the DVM program to the fourth or final year of the BScAH program, and has made this recommendation.

The UC program started as an initiative of the Faculty of Medicine but is now the responsibility of the UCVM. It will be a joint program with Olds College and is still under development. The BScAH program at the UA will provide a strong background in life sciences with application in immunology, animal physiology, nutrition, behaviour and welfare, and animal production and food processing. Three majors (Food Animals, Food safety and Quality, and Companion and Performance Animals) will provide students with enrichment to match career goals while meeting DVM admission requirements.

In summary, these BScAH programs are attractive because they:

- target recruitment of rural students to careers in veterinary medicine and/or animal health science;
- provide opportunity for urban students to become familiar with resource and animal industries;
- serve as a pre-veterinary program to better prepare students for careers in rural veterinary practice, specialized production animal production, food supply veterinary medicine, and veterinary public health (food safety);
- serve as an entrée to careers in biomedical and or animal health research;
- prepare graduates to serve as members of an RCVP team delivering public practice services and management services such as nutrition;
- provide graduates who can be employed delivering public practice services such as food safety and environmental management, and in animal health related industries.

The AVMSC:

Recommends the establishment of BScAH programs, as proposed by the UC and UA.

Recommends establishing financial incentive for BScAH students granted deferred acceptance to a DVM program and undertaking enhanced education focused on rural practice and/or food supply veterinary medicine (FSVM).

Recommends the AbVMA consider the implication for amendments to provincial veterinary legislation that would allow for the registration of baccalaureate graduates and their participation in certain activities within the scope of veterinary medicine.

Recommends allocation of the financial resources required to implement the BScAH programs.

Animal Health Technology

Private veterinary practice provides clinical services for individual animals or populations of animals owned by individuals. In general, most of these services are medical in nature. Education in animal health technology, with its emphasis on supporting veterinarians in performing medical procedures, is tailored for this form of veterinary practice.

Veterinary practitioners report difficulty in recruiting and retaining AHTs. Part of the problem in the past has been attributed to poor salaries but recent improvements may have largely overcome this dimension of the problem. Another factor in some cases is reluctance of veterinarians to assign to AHTs more challenging tasks that are more in keeping with their education. Regardless interest in the AHT program remains high and there are on average more applicants than can be accommodated in the incoming classes.

The recent increase in enrolment quotas in AHT programs was strongly supported by the AVMSC *viz* 12 at Lakeland College in 2005 and 20 at Olds College in 2006. However, in the face of what is seen as a continuing acute shortage of AHTs by the veterinary profession, it would be highly desirable to increase enrolments further especially since the applicant pool and institutional capacity allows such action. The introduction of distance modes of delivery of AHT education is also viewed as a welcome development that should facilitate re-entry of AHTs who may have stepped out of employment for family considerations.

It is anticipated that AHTs will be assigned more responsibility for delivering medical services as practices seek to become more cost effective²³. If rural practices are to remain viable and cope with the profound economic changes in the livestock industry, it may well develop that AHTs will deliver, under veterinary supervision, some of the services that have traditionally been performed directly by veterinarians. Implementing the concepts of food supply veterinary medicine and rural community veterinary practice will fuel the demand for AHTs with advanced training to serve this field of veterinary medicine.

Under some circumstance, the AVMSC believes it is essential to provide opportunities for AHTs to acquire advanced training in specific medical skills through appropriate continuing education programs. In the future, if more procedures are delegated to AHTs by veterinarians, it is reasonable to anticipate that at some point there will be sufficient justification for the establishment of post-diploma training or baccalaureate level training that provides advanced training in animal health technology. There has been discussion and some support from the Committee for making a recommendation to use the existing applied degree model offered at colleges and technical institutes to provide advanced training in animal health technology. It is anticipated the regulations under the *Veterinarians Act* can be amended to accommodate these developments.

The wide availability of human resource and business management training across the province also provides opportunities for AHTs to acquire additional skills and knowledge necessary to fill roles as veterinary hospital/clinic managers.

²³ Remsberg DW, Galligan DT, Ferguson JD. 2007. A proposed novel food animal health care delivery system. JAVMA 231:854-860.

As more tasks are delegated to AHTs, the need for a cadre of veterinary technical assistants to perform tasks that require less training has emerged. These “assistants” can be expected to undertake structured training programs requiring 6-12 months to complete. The colleges and technical institutes are the appropriate institutions to provide such training in response to developing demand.

The AVMSC:

Recommends expanding AHT enrolments if the shortage of graduates continues despite recent increases.

Recommends initiatives by the AbVMA that encourage or permit veterinarians to delegate more technical procedures to AHTs.

Recommends the development of formal education programs to provide advanced medical technology training to AHTs.

Recommends the development of 6-12 month training programs for technical assistants.

Graduate Education

As the need for veterinary and animal health services become increasingly sophisticated, the educational system must provide opportunities for more specialized education in graduate degree or professional residency programs.

While a DVM program can serve to launch a professional career in private practice, for those who wish to specialize in fields of practice such as a particular livestock species (FSVM), ecosystem health (including wildlife and conservation medicine), or veterinary public health and research, most will need to undertake further postgraduate education.

Non-thesis Masters programs

The Universities of Calgary and Alberta are well positioned to accommodate the need for non-thesis programs if given the resources. The University of Saskatchewan has for many years offered M.Vet.Sc degrees, which have proved effective in providing advanced postgraduate clinical education in many veterinary medical disciplines/species fields. The Committee expects similar programs will be developed at the UCVM as this institution matures.

Research degrees

Those students planning a career in research are expected to pursue conventional MSc and PhD degrees. The Universities of Alberta, Calgary, Lethbridge, and Saskatchewan have strong graduate faculties. With the growth in the number of graduate faculty with expertise in disciplines relevant to animal health, opportunities to provide graduate research training will increase sharply if stipends for graduate students are available. Programs that take advantage of the potential of comparative medicine to contribute to biomedical science should be particularly attractive.

Residency training

Residency training of DVM graduates in medical disciplines or in species practice are also essential elements in the educational system. Typically, residency training involves at least two to three years of mentored postgraduate training in a clinical discipline. Residents normally have the goal of passing the examination for Diplomacy in one of the specialty boards/colleges. Residents may opt to combine their training program with a course-based Masters degree or an MSc or PhD research degree.

The WCVM is particularly well placed to accommodate residency training in that it has a full service veterinary teaching hospital (VTH) including ambulatory services. The UCVM is expected to develop residency programs as opportunities permit. The presence of Diplomates in the local small animal and equine practices as well as in their Faculty makes this possible.

Food supply veterinary medicine and production animal health

Because livestock production units continue to grow in size and to become more specialized and intensive, the need to provide education that more adequately fits veterinary graduates for what is now being called production animal health or integrated health management has been recognized. At the present time there is a move to incorporate this field into one that extends from the farm to the consumer (“from farm to fork”) and includes public practice services. This is being called “food supply veterinary medicine” (FSVM)²⁴.

The AVMSC expects food animal practice as it involves larger enterprises will be conducted by veterinarians who increasingly will specialize or emphasize practice in only one of the food animal species, viz. feedlot cattle, dairy cattle, swine, poultry, small ruminants, aquaculture and to some extent beef cattle. Cow-calf operations will likely remain a major part of a conventional multi-species practice and of rural community veterinary practice as defined herein. Food animal specialists will need to be knowledgeable not only about current health management practices but also about the economics, business practices, and policy environment relevant to the industry they wish to serve. It seems reasonable to expect that many will wish to undertake postgraduate studies in degree or residency programs to achieve an educational level that will fit them to serve the industry in question. Indeed this is already happening at the WCVM and elsewhere.

The expertise of the University of Alberta can be particularly useful in the education of the cadre of food supply veterinarians and others involved in assuring food safety in the food production chain. If the University of Alberta is given the resources to become involved more directly in animal health education, there will be an opportunity for this institution to launch and nurture students in the BScAH program interested in becoming veterinarians who specialize in a food animal species. Those who gain admission to a DVM after a minimum of three years²⁵ or after completing this degree could be enrolled in a graduate program in each of the three summer recesses that occur during the course of the DVM program.

²⁴ http://www.avma.org/public_health/fsvmc/fsvmc_22.pdf
http://www.avma.org/public_health/fsvmc/fsvmc_toc.asp

²⁵ Such students could be awarded a BScAH degree by the U of A after successfully completing their first year of study in the DVM program.

Other students completing the BScAH can pursue graduate programs that allow them to fill roles in the animal health and/or animal food chain systems.

The development of a non-thesis Masters degree in animal health, or comparable program, at the University of Alberta is seen as a highly desirable development that could also take advantage of leading edge and highly relevant expertise in the AAF.

Ecosystem health (including wildlife, conservation medicine)

Students aspiring to a career in ecosystem health can expect to undertake graduate training either as part of a research degree program or as part of a clinical training program that remains to be developed.

The veterinary profession along with many others has recognized the combined effect of globalization, industrialization, and the growth of human and some animal populations has created circumstances where the health of human and animal populations must be managed from an ecosystem perspective. The increased connectedness of this new world means that consequences of actions taken at a given point can affect the health of people and biota at another, often through new paths. The challenges have ecological and socioeconomic dimensions that require linkage of science and policy and radically new approaches and quantitative tools. New scientific societies are addressing this task²⁶.

The recognition of the growing importance of the role of wildlife in emerging zoonotic diseases is being accommodated by the activities of the Canadian Cooperative Wildlife Health Centre (CCWHC). For example, it serves as an important resource in monitoring WNV. This network has a node at each Canadian veterinary faculty (including the UCVM) and the Centre for Coastal Health (CCH) in Nanaimo. The CCWHC plays a central role in executing the new National Wildlife Disease Strategy. Given that it originated at the University of Saskatchewan and still serves as the administrative core of the organization, it is a valuable resource to complement and support initiatives in Alberta.

Managing for ecosystem health must be interdisciplinary, if not transdisciplinary, and guided by community priorities. Hence, it is important for all players to have some assured means of communicating with each other in respect to both education and research.

Veterinary public health

Historically veterinarians working in veterinary public health without benefit of postgraduate education have been employed by governments in food safety, particularly meat inspection and programmatic activities to deal with important zoonoses like tuberculosis and brucellosis. More recently, a cadre of veterinary epidemiologists with graduate research degrees has been employed in management positions in government departments with responsibilities related to human and veterinary public health. The Committee is aware of the initiatives to establish Master of Public Health (MPH) programs in Alberta and Saskatchewan. The WCVM is playing a lead role in the development of the Saskatchewan program.

²⁶ E.g. International Association for Ecology and Health

The Faculty of Agricultural, Life and Environmental Sciences, University of Alberta is working with the School of Public Health to enhance veterinary public health in the existing MPH program. The U of A is integrating its cross-faculty research in zoonoses, ecosystem health, and food safety issues, which are of particular concern to Alberta Agriculture and Food, Sustainable Resource Development, and the Provincial Laboratories of Public Health.

Conventional MPH programs do not capitalize on the veterinarian's strength in zoonoses and ecosystem health so it may be that some graduate programs for veterinarians should be built on more generic MSc programs.

Baccalaureates as well as veterinarians can be expected to pursue the MPH or similar degrees.

Animal health diagnostic laboratories are present variously in each province as part of the federal establishment, provincial departments of agriculture, or university departments. Increasingly these laboratories are being integrated into surveillance programs. Assuring food safety and monitoring zoonotic diseases is a significant part of their activity. Given the increasing importance of zoonotic disease there needs to be good communication and sharing of methodology and information among animal health and public health laboratories. These laboratories are very useful venues in which to conduct thesis research projects.

Comparative Biomedical Science and Laboratory Animal Medicine

The biomedical research establishment has not had access to sufficient numbers of veterinarians trained in research to take advantage of the unique opportunities of comparative medicine to advance medical knowledge^{27,28}. Such scientists typically are employed in medical research institutions of all types. Often they are particularly knowledgeable about laboratory animal medicine, a field that is badly in need of more human resources.

Stipends for graduate students

At present, no provincial research-granting agency gives high priority to providing stipends for graduate students in animal health programs and more generally grants for animal health research.

Veterinarians Attracting veterinarians to undertake graduate studies is dependent on the availability of stipends at an appropriate level. Historically for research training, this level has proven to be roughly comparable to Canadian Institutes of Health Research (CIHR) training awards to medical professionals (MD, DVM, PhD). Sources of stipends have been the CIHR, Natural Sciences and Engineering Research Council (NSERC), provincial agencies, charitable foundations, and industry. NSERC stipends have proven to be too low to attract veterinarians to graduate studies. In some cases, junior faculty members have been granted graduate study privileges. In total, these opportunities have been limited and likely account in part for weakness in Canada's animal health research performance.

²⁷ National Academy of Science, National Research Council. 2004. National need and priorities for veterinarians in biomedical research. National Academies Press. Washington, DC.pp87.

²⁸ National Academy of Science, National Research Council. 2005. Critical needs for research in veterinary science. National Academies Press. Washington, DC.pp222.

Funding clinical residency programs in academia has been secured by some combination of veterinary teaching hospital (VTH) income and operating grants from government. In the absence of a VTH at the UCVM some form of operating support from government and/or industry will be necessary.

Non-veterinarians in animal health fields Typically graduate student stipends are provided by NSERC, university scholarship funds, as a component of a research supervisor's grant, or industry, etc. If further experience indicates such sources are not adequate for baccalaureate graduates pursuing advanced degrees in animal health in Alberta it will be necessary to consider the merits of a more targeted program.

The AVMSC:

***Recommends** that research-funding agencies in Alberta assure the availability of stipends that will attract veterinarians and other animal health professionals into graduate programs.*

***Recommends** the establishment of graduate programs supported by provincial stipends for students who wish to specialize in food supply veterinary medicine and other animal health related degrees.*

***Supports** the establishment of practice based Post Graduate Diploma and/or Masters degree programs at the UA Faculty of Agricultural, Life and Environmental Sciences (ALES) and the UCVM for veterinary graduates and, where desired, serve as a component of a combined degree program for in-program DVM students at the UCVM and the WCVM.*

***Supports** the establishment of MPH or equivalent degrees and the development of new generic programs that provide training in veterinary public health at the Universities of Calgary, Alberta, and Saskatchewan.*

Continuing Education (CE) and Professional Development

The animal health system has to assure that its human resources have the opportunity to maintain and enhance their competence through continuing education and professional development. Given the increasingly strong link between animal health and the welfare of the community, the Committee believes it would be desirable for the universities to make a significant commitment to this task. Working together with each other and with professionals and groups with shared interests in CE, the universities could create coordinated comprehensive programs that would not be possible for any one institution.

CE and professional development for veterinarians

The development of comprehensive CE programs for veterinary practitioners is needed for those who want to significantly upgrade their knowledge and skills in preparation for: 1) being more involved in the DVTH of the UCVM, 2) delivering public practice services, including the recognition of foreign animal diseases, 3) enhancing the quality of their practice in an area of particular interest, and 4) enhancing expertise in a particular species, even to the point of becoming certified by examination in a species category of the American Board of Veterinary Practitioners (ABVP). Practitioners could reasonably aspire to this objective if a comprehensive and coordinated series of modular two or three-day sessions presented over an extended time frame, e.g. two years, were available to them.

CE for animal owners and first responders

Veterinarians and members of their practice team can deliver a valuable service to their communities by providing appropriate health related CE for animal owners and first responders. The importance of early detection of foreign animal disease in order to minimize its impact cannot be overemphasized. Hence, from this fact alone it is imperative to make sure those who care for animals on a daily basis are sufficiently knowledgeable to alert their local veterinarian of a potential problem. While the AVMSC has not dwelt on coping with potential bio-terrorism, it is prudent to be alert to this possibility.

CE for Animal Health Technologists

The introduction of distance education courses in animal health technology is seen as a very timely and efficient way for AHTs to upgrade their skills, especially for individuals who may be re-entering the field after a period of absence. The colleges and technical institutes offering AHT programs are also prepared to provide short courses to enhance proficiency in a particular veterinary medical procedure.

The AVMSC:

***Recommends** that universities, colleges, and technical institutes in Alberta's animal health system collaborate in offering comprehensive professional development programs for veterinarians and such other CE as may be appropriate for those with interests in animal health.*

The “Campus Alberta” Approach

The AVMSC has tried to encourage the “integration” of post-secondary education. Cooperation among the relevant institutions seeks to allow students interested in a career related to animal health to enter the system at many points. Depending on aptitude, scholastic achievement, and personal interest students can, by following an appropriate educational program, pursue careers as an animal health technician, as a baccalaureate in a health related discipline, as a veterinarian, or as a scientist. Essentially the system seeks to follow the ideals of Campus Alberta approach.

The specific elements of post-secondary institutional programs dealing with animal health and veterinary medicine and relating to the Campus Alberta approach are as follows:

UCVM admission requirements for the DVM program can be met at all Alberta universities and most recognized colleges.

The new baccalaureate degree, BSc Animal Health (BScAH), planned at the University of Alberta and the University of Calgary can provide the educational base to: 1) meet admission requirements for DVM programs at the UCVM and the WCVM, 2) provide students opportunities to gain advanced competence in a selected veterinary field (see below), 3) pursue graduate studies in biomedical and health sciences, and 4) pursue a career related to animal health.

The option of allowing selected students deferred admission to a DVM program together with granting equivalency of the first year of the DVM program to the final year of the BScAH program will allow these students to pursue graduate studies in each of three summer sessions in the DVM program (a modified “co-op” program). This cooperative process potentially involving UC, UA, UL, all the CTI, and partners in the government and private sector (the latter in association with summer session activities) as appropriate will make it possible for students to graduate with enhanced competence in a selected veterinary field e.g. practice in a food animal species.

There are existing agreements for CTI students to transfer credits into programs at the UA Faculty of ALES.

AVRI was launched in 2006 to coordinate veterinary research within the UA and with partner institutions and agencies. Founding partners are the University of Alberta, University of Calgary, Agriculture and Food, Provincial Laboratories of Public Health, and Sustainable Resource Development.

UA and UC are committed to taking the lead in establishing an Animal Health Research Network among regional animal health research agencies. It will provide a forum for graduate students to share research results and gain experience in making scientific presentations.

The AVMSC:

Recommends that UC, UA, UL, and CIT continue to strive to execute plans that foster the “Campus Alberta” approach in the animal health education system.

Developing Capacity in Veterinary Research

Veterinary research is an integral part of the animal health system of Alberta. It includes both clinical investigation and more basic laboratory research. Investment in this enterprise must be assured by established or by newly created research-funding agencies. At present, no funding agency has animal health as a major priority.

The AVMSC has encouraged the establishment of AVRI. This initiative was seen as an effective means of focusing the diverse resources of the University of Alberta and neighboring institutions on veterinary medicine and animal health. This has proven to be the case. It was also anticipated that it could serve as an administrative mechanism for coordinating veterinary research among the UA, UCVM, WCVM, VIDO, AFF, and other agencies with similar interests.

While the desirability of coordination remains, it now is deemed more effective to realize this objective by establishing a regional if not nation wide animal health research network. The following has been proposed by the University of Alberta and the UCVM:

**Animal Health
Research
Network (AHRN)**

The Opportunity

There is a need to foster research collaboration within Alberta and among institutions across Canada and

The AVMSC notes the continuing excellent cooperation that is being achieved between the UA and the UC and with partner agencies (Agriculture and Food, Provincial Public Health Laboratories, and Sustainable Resource Development, CFIA, etc).

AbVMA gave strong support to the establishment of AVRI and can be expected to be equally enthusiastic about the proposed Animal Health Research Network.

AVRI from its inception is laying the groundwork for close collaboration with the AAF and other provincial and federal agencies located at the U of A and western Canada in conducting research of mutual interest particularly supporting transdisciplinary research that falls at the nexus of animal, human, and ecosystem health. Similarly, the UCVM is laying the groundwork for collaboration with local and regional partners.

The AVMSC:

Recommends the Province of Alberta take steps to assure investment in both basic and applied veterinary research.

Supports plans to establish a regional (if not national) Animal Health Research Network (AHRN) to encourage collaboration and networking among academic institutions and other relevant agencies.

Supports the continued development of Alberta Veterinary Research Institute (AVRI) as a mechanism to encourage and focus veterinary and animal health research at the University of Alberta and to facilitate collaboration with institutional partners with shared interests.

Supports AVRI's inclusion of a focus on the nexus of animal, public, and ecosystem health – and its commitment to emphasize three theme areas: food safety, quality, and sustainability; animal public and environmental health; and food animal systems, markets, and society.

Coordinating the Animal Health System

The AVMSC has proven to be a useful vehicle to encourage and facilitate dialogue among representatives of the UC, UA, WCVM, Alberta colleges and technical institutes, AbVMA, AAF, Advanced Education and Technology, and the livestock industry. The Steering Committee has been effective in building bridges between the UA and UC and other animal health research agencies, *to wit* the proposal for an Animal Health Research Network and joint plans for a new BScAH (Animal Health) degree that incorporates participation of the colleges. The development of AVRI has been encouraged and is proving a means for UA to focus its diverse resources on veterinary research and to interact with partners in this domain. The AVMSC anticipates continuing discussions between the UA and UCVM and WCVM to determine how their combined resources can be integrated using the planned BScAH and DVM programs to produce graduates better suited to meet the needs in food supply veterinary medicine.

The process has been productive. It would be desirable to provide for some form of ongoing assured dialogue among the principal agencies who are directly concerned with the effectiveness of the animal health system.

The AVMSC:

Recommends that a standing committee be established by the AbVMA and convened at least once annually to assure communication, coordination, and integration where possible, among the principle institutions and agencies involved in post-secondary education, research, and delivery of services in veterinary medicine and animal health in Alberta.

Appendix I

Environmental Scan²⁹

The future direction of Alberta's animal health system is being influenced by several factors that extend beyond as well as within Alberta's and Canada's borders.

Diseases issues

Globalization and the incursion of growing human populations into all corners of the globe have essentially increased the risk of exposure of Alberta's animals and people to all the infectious agents of the world. Recent Canadian experience with BSE, SARS, WNV, CWD, and AI make this patently evident and indicates risk from agents such as these will increase in the future. The possibility of bioterrorism also needs to be considered. The great majority (ca75%) of the emerging or re-emerging infectious diseases of people are zoonotic in origin.

Present speed of international air travel means a person can travel from any part of the globe and land at Calgary or Edmonton in less than 24 hours, well within the survival time of some significant animal and human pathogens

Recent newspaper headlines *viz.* hantavirus infection associated with exposure to deer mice, salmonellosis transmitted by iguanas, and *E. coli* O157 by food contamination are reminders that indigenous zoonotic diseases are continuing threats to public and animal health.

History affirms that new, previously unreported animal diseases that are important from economic, public health, or ecosystem health (conservation) perspectives will continue to occur sporadically or possibly in epidemic proportions in Alberta and western Canada.

Translocation of livestock, game species, and exotic animals continue to be serious threats to human, domestic animal, and wildlife (e.g. TB, CWD, monkey pox).

Increasing environmental disturbance brings with it the risk of loss of biodiversity as part of a general threat to ecological or nature's services upon which all life ultimately depends. (The Millennium Ecosystem Assessment³⁰ recently estimated 60% of the earth's ecological services *viz.* CO₂ fixation, water retention and purification, soil production, etc. are at risk.)

Climate change, habitat fragmentation, redistribution of disease vectors and emergence of infectious disease in previously unexposed populations pose increased risk to animal and human health, for example the recent outbreaks of bluetongue in sheep in southern Europe.

Industrial technology brings with it the risk of a.) toxicological disease in animals and people, e.g. mercury, PCBs, etc., b.) antibiotic resistant microorganisms, and c.) threats to air and water quality, e.g. H₂S emissions from oil fields, etc. if not managed properly.

Livestock enterprises can be the source of human pathogens (e.g. *E. coli* O157, *Salmonella spp.*) as well as impairing environmental quality if not managed properly.

Increasingly dense animal and human populations magnify the impact of infectious disease when they occur.

Economic issues

Export market access requires a rigorous animal health system and "accredited" veterinary professionals who meet OIE and WTO standards.

²⁹ From the AVMSC Initial Report, June 2005

³⁰ <http://www.millenniumassessment.org/en/About.Overview.aspx>

Health management for optimal productivity and animal welfare is essential to having a livestock industry that can be “competitive in a global marketplace” in addition to assuring Alberta livestock are free of diseases that limit export opportunities.

Demographic issues

The growth of Canada’s skilled labour force, which has been estimated at 226,000 per year for the past 25 years, will have slowed to 42,000 per year by 2010 and by 2016 will be near zero. Baby boomers will begin retiring in the next five years and within 10 years there will be two retirements from the workforce for every person entering. The USA Department of Education has projected that 60% of the new jobs created in this century will require skills presently held by only 20% of the existing workforce.³¹

It seems reasonable to project there will be an acute shortage of skilled professionals in many fields including those pertaining to animal health. In fact, AAF has already been experiencing difficulties in recruiting veterinary specialists for the past several years.

Achieving a more desirable balance between work and family responsibilities is a universal lifestyle issue in today’s Canadian society.

The high proportion of women in the veterinary profession (75-80% of new graduates) influences the veterinary workforce by limiting the working life of those who opt to devote more time to raising a family.

The longstanding difficulty of recruiting and retaining veterinarians in rural practice in Alberta and elsewhere.

Alberta’s livestock industry

The number of livestock producers continues to decline. Livestock populations, while variable, respond to market opportunities and rise and fall accordingly. Essentially the industry is fractionating into larger more specialized farm units and smaller less specialized units where livestock supplement income from off-farm employment. The former increasingly require more sophisticated animal health services while the latter are best served by a generalist community or mixed animal practitioner.

If the rise in the Canadian dollar *vis a vis* the US dollar, together with rising feed grain prices persists it will create severe economic hardship for much of the beef and pork industries. It can be anticipated that this circumstance may accelerate the reduction in the number of livestock enterprises in Alberta and as a consequence reduced demand for conventional veterinary services for these industries. Assuming the surviving enterprises will have to be more competitive, veterinary services to meet their needs will need to both more sophisticated and cost effective.

The poultry industry can serve as a more extreme illustration of the overall direction of the livestock industries. Relatively few specialized veterinarians, supported by an adequate laboratory and surveillance system, can meet the ordinary needs of the specialized producers who provide over 80% of market needs. However, it is estimated there also exists about 15,000 small farm flocks whose economics do not warrant or justify the expense of specialized services. Nonetheless, these flocks are a potential focus for the introduction of diseases that can have profound impacts on the entire industry e.g. avian influenza and Newcastle disease. Somehow the animal health system must deal with circumstance. In this case, it would be logical to ensure through government policy that community practices exist to serve this branch of the poultry industry. A similar rationale can be made in respect to all small livestock enterprises.

³¹ Linda Duxbury, Carlton University, in a presentation to the AAFRD, 2005.

Rural communities

Rural populations continue to decline except along the Highway # 2 corridor. The Alberta government has responded with an aggressive rural development strategy that emphasizes economic growth, community capacity and infrastructure, adequate health care, and learning and skills development. Since the achievement of the goals of this strategy will be supported by an adequate cadre of rural veterinary practitioners and other animal health personnel, the Committee wants to ensure that veterinary and animal health education and research in Alberta take account of the special needs of rural communities. It is envisaged that rural veterinary practices should be able to deliver both private and public services. The latter would be provided through contracts with all levels of government. Whether the range of requisite competencies can be vested in a single practitioner trained to deliver both conventional mixed animal and newer public practice services or will require members of a multi person practice each with special skills is still a matter of debate among the Committee.

At this point in the development of the program at the University of Calgary, it is encouraging that the importance of responding to the needs of rural communities has been recognized.

Animal welfare

Animal welfare is a crucial consideration in the development of a strategy for animal health education and research. It is a central concern of the veterinary profession and its members are committed to attainment through their profession's oath. Animal welfare is closely linked to freedom from disease and productivity. The Committee is confident that the universities, colleges, and institutes involved in animal health education are dealing with this subject and serve as an important resource in public policy debates. Both the science of animal behaviour and the ethics involved in human/animal interactions are the subject of teaching and/or research at these institutions. The Committee heard that AFAC believes there are many animal welfare issues in the livestock industry that need to be addressed and that the animal health strategy needs to ensure adequate resources are available to deal with these issues effectively.

Public concern about the welfare of livestock raised in intensive production systems (factory farms), apart from that of more militant animal rights groups, could grow³². While the livestock industry is responsive to issues concerning animal welfare, it is not beyond the bounds of possibility that public pressure could lead to legislation that mandated more extensive production systems that addressed key welfare issues. The impact of this could have a profound impact on the nature of some livestock industries and ultimately rural communities if the result was a move back to more extensive management systems.

³² Mathew Scully. (former White House speechwriter) *Dominion: The Power of Man, the Suffering of Animals and the Call to Mercy*. Cited in National Post, Monday, 13 June 05, pA17.

Appendix II

Acronyms

AAF - Alberta Agriculture and Food
AAVLD - American Association of Veterinary Laboratory Diagnosticians
AAVMC - Association of American Veterinary Medical Colleges
AbVMA - Alberta Veterinary Medical Association
ABVP - American Board of Veterinary Practitioners
AFAC - Alberta Farm Animal Care
AHRN- Animal Health Research Network
AHT - Animal Health Technologist
AI - Avian influenza
ALES*- Agricultural, Life and Environmental Sciences Faculty of the University of Alberta
AmVMA or AVMA - American Veterinary Medical Association
ASN - Alberta Surveillance Network
ASRA - Alberta Science and Research Authority
AVMSC - Alberta Veterinary Medicine Steering Committee
AVRI - Alberta Veterinary Research Institute
BASc AHT - Bachelor of Applied Science in Animal Health Technology
BScAH - Bachelor of Science in Animal Health
BSE - Bovine Spongiform Encephalopathy
CCH - Centre for Coastal Health
CCWHC - Canadian Cooperative Wildlife Health Centre
CE - Continuing Education
CFIA - Canadian Food Inspection Agency
CIHR - Canadian Institutes of Health Research
CSF - Classical Swine Fever
CTI - Colleges and Technology Institutes
CVMA - Canadian Veterinary Medical Association
CWD - Chronic Wasting Disease
DVLC - Distributed Veterinary Learning Community
DVM - Doctor of Veterinary Medicine
DVTH - Distributed Veterinary Teaching Hospital (University of Calgary)
FAD - Foreign Animal Disease
FMD - Foot and Mouth Disease
FSVM - Food Supply Veterinary Medicine
LSI- Life Sciences Institute
MPH - Master of Public Health
NAIT - Northern Alberta Institute of Technology
NAVLE - North American Veterinary Licensing Examination
NEB - National Examining Board
NSERC - Natural Sciences and Engineering Research Council
OIE - Office Internationale Epizooties (World Organisation for Animal Health)
OMAFRA - Ontario Ministry of Agriculture, Food and Rural Affairs
OVC - Ontario Veterinary College
PDS - Prairie Diagnostic Services
PHAC - Public Health Agency of Canada
RCVP - Rural Community Veterinary Practice

SAC – Stakeholders’ Advisory Council
SARS - Severe Acute Respiratory Syndrome
SRM - Specific Risk Material
TB - Tuberculosis
UA or U of A - University of Alberta
UC or U of C -University of Calgary
UCVM - University of Calgary Faculty of Veterinary Medicine
UL or U of L - University of Lethbridge
US or U of S - University of Saskatchewan
VIDO - Vaccine and Infectious Disease Organization
VTH - Veterinary Teaching Hospital
WCVM - Western College of Veterinary Medicine, University of Saskatchewan
WNV - West Nile Virus
WTO - World Trade Organization

* Formerly AFHE-Agriculture, Forestry and Home Economics

Appendix III

List of AVMSC Contacts

Ministry of Advanced Education and Technology and its antecedent:

Hon. Lyle Oberg, Minister
Hon. David Hancock, Minister
Hon. Denis Herard, Minister
Hon. Doug Horner, Minister

Maria David-Evans, Deputy Minister,
W.J. (Bill) Bryne, Deputy Minister
Robert Fessenden, Deputy Minister
Phil Gougeon, Assistant Deputy Minister
Ronald Dyck, Assistant Deputy Minister

Individuals who served on the AVMSC for a period of time:

Peter Eyre, UCVM, University of Calgary and Virginia Tech/University of Maryland
Eugene Janzen, UCVM, Associate Dean Clinical Programs, University of Calgary
Eugene Rawe, Alberta Beef Producers

Industry contacts:

Alberta Beef Producers
Alberta Farm Animal Care
Alberta Veterinary Medical Association
Alberta Association of Animal Health Technologists
Canadian Veterinary Medical Association
“Feather” Boards
Alberta Milk
Alberta Pork
Vaccine and Infectious Diseases Organization
Western Canadian Association of Bovine Practitioners
Western Canadian Association of Swine Practitioners
Western Stock Growers
Food Supply Veterinary Medicine Coalition

Science, education, and government contacts:

Agricultural, Life and Environmental Sciences (ALES), University of Alberta
Alberta Advanced Education and Technology
Alberta Agriculture and Food
Alberta Association of Colleges and Institutes of Technology
Alberta Health and Wellness
Alberta Life Sciences Institute
American Association of Veterinary Medical Colleges
Association of Alberta Municipal Districts and Counties

Canadian Food Inspection Agency
Council of Medical Officers of Health
Faculty of Medicine, University of Calgary
Faculty of Veterinary Medicine, University of Calgary
Ontario Veterinary College, University of Guelph
School of Public Health, University of Alberta
University of Lethbridge
Western College of Veterinary Medicine, University of Saskatchewan

Individuals who provided comments to the Committee, its subcommittees or to the Chair, in person, by telephone, or in correspondence:

Burim Ametaj, Agricultural, Life and Environmental Sciences, University of Alberta
Greg Andrews*, practitioner, Alberta Veterinary Medical Association
Gordon Atkins, Natural Resources Conservation Board
Lorne Babiuk**, Director, Vaccine and Infectious Diseases Organization (VIDO) (Now VP Research, UA)
Jeremy Bailey*, Associate Dean Academic, WCVM, University of Saskatchewan
Madonna Benjamin**, Western Canadian Association of Swine Practitioners
John Berezowski**, Alberta Agriculture and Food
Reynold Bergen, Alberta Beef Producers
Pat Brennan, Councilor, Parkland County
Dalin Bullock**, Dean, Animal Health Sciences, Olds College
Bonnie Buntain, UCVM, Assistant Dean, International Programs,
Eric Butters**, Alberta Beef Producers
Jan Bystrom**, Alberta Agriculture and Food
Daphne Cheel**, Executive Director, Alberta Life Sciences Institute
Robert Church, Faculty of Medicine, University of Calgary
Susan Church, Alberta Farm Animal Care
Robert Clark, Public Health Agency of Canada (PHAC), Ottawa
Ron Clarke, Alberta Agriculture and Food
Ralph Christian**, Chair Animal Health Strategy Steering Committee, Alberta Agriculture and Food
Jay Cross*, Associate Dean Research, UCVM
Larry Delver*, Canadian Food Inspection Agency, Calgary
Gordon Dittburner, CVMA, Canadian Coalition for Health in the 21st Century
Craig Dorin**, Airdrie, Western Canadian Association of Bovine Practitioners
John Donner**, Assistant Deputy Minister, Alberta Agriculture and Food
Dennis Fitzpatrick, Vice President Research, University of Lethbridge
George Foxcraft, Associate Dean Research, Agricultural, Life and Environmental Sciences, University of Alberta
Clay Gelhaus, Deputy Registrar, Alberta Veterinary Medical Association
Hon. Doug Griffiths, MLA, Wainwright
Peter Hackett, Alberta Ingenuity
Benedikt Hallgrimsson,* Assistant Dean, Faculty of Medicine, University of Calgary
Kent Hecker**, UCVM
Susan Gal, poultry industry (Feather Boards)
Grant Gall, Dean, Faculty of Medicine, University of Calgary
Karen Grimsrud, Alberta Health and Wellness

Gavin Hamilton, Chair, CVMA AHT Veterinary Training Program Accreditation Committee
 Gary Hauer, Alberta Agriculture and Food
 Lawrence Heider, Executive Director, Association of American Veterinary Medical Colleges,
 Washington
 Paul Hodgman, Executive Director, Alberta Pork
 Sandy Honour, Alberta Agriculture and Food
 Robert Hudson*, Director, AVRI, University of Alberta
 Terry Hunt, practitioner and consultant, Sundre
 Tom Inglis**, Poultry Health Services Ltd., Airdrie.
 Murray Jelinski, Alberta Beef Chair, WCVM
 Susan Kutz**, UCVM
 John Knapp, Assistant Deputy Minister, Alberta Agriculture and Food and Alberta
 Environment
 Cornelia Kreplin, Alberta Agriculture and Food
 Terry Keyko, Alberta Rural Development Fund
 Ted Leighton**, WCVM and Director, Canadian Cooperative Wildlife Health Centre
 Hugh Lewis**, Banfield, The Pet Hospital, Oregon
 Jack Manns**, UCVM, Calgary
 Wayne McDonnell**, University of Guelph, Consultant on UCVM accreditation
 Rod McFarlane*, practitioner and Past President, AbVMA
 Nick Nation, Histobest Inc., Edmonton
 Milton Ness, Instructor, Northern Alberta Institute of Technology
 William Newton**, Western Stock Growers
 Sharron Oakey, practitioner, Drayton Valley
 Erasmus Okine**, Agricultural, Life and Environmental Sciences, University of Alberta
 Roger Palmer, Director, School of Public Health, University of Alberta
 Riets Palsma**, Alberta Milk
 Jeff Person, practitioner, Edmonton
 Greg Parks, Alberta Agriculture and Food
 Gerry Predy, Medical Officer of Health, Capital Health
 Margo Pybus, Alberta Natural Resources
 Otto Radostits, WCVM, University of Saskatchewan
 Norman Rawlings*, Associate Dean Research, WCVM
 Rob Rennie**, Chair Board of Directors, Alberta Life Sciences Institute
 Carl Ribble*, Associate Dean, Academic Programs, UCVM
 Gerald Rhodes, Executive Director, Association of Alberta Municipal Districts and Counties
 Frank Robinson*, Associate Dean Academic, Agricultural, Life and Environmental Sciences,
 University of Alberta
 Trevor Ruberry**, Alberta Agriculture and Food
 William Samuels, University of Alberta
 David Sherman, Boston, international development
 Pam Sokol**, Associate Dean Faculty of Medicine University of Calgary
 Mike Southwood, Alberta Milk
 Craig Stephen, Director, Canadian Centre for Coastal Health and UCVM
 Samantha Stewart, business consultant to Alberta Veterinary Medical Association
 Andy G. Strang, practitioner, Cardston,
 Rod Sydenham**, practitioner and consultant, Cochrane; founding chair Food Supply
 Veterinary Medicine Coalition
 Ted Sutton, UC consultant re BScAH

Becky Taylor, Alberta Association of Animal Health Technologists
Larry Turner, Lethbridge Laboratory, Canadian Food Inspection Agency
Craig Wilkinson, Agricultural, Life and Environmental Sciences, University of Alberta
Norm Willis, American Association of Veterinary Medical Colleges, Foresight Report
Robert Wilson*, Vice President, Academic, Olds College
Bruce Wine, practitioner, Ponoka
William Yates, Director, Lethbridge Laboratory, Canadian Food Inspection Agency
Elizabeth Zabori, President, AAAHT

* Served as a substitute representative of an AVMSC member on occasion or on a AVMSC subcommittee

** Attended meetings of AVMSC or its subcommittees

Chair attended:

CVMA summit and meetings on veterinary public health, and Veterinarians Without Borders; Victoria, BC
UCVM Stakeholders Advisory Council meetings
Two meetings of Alberta Poultry Health Review Committee
Veterinary Medical Education for Modern Food Systems, Kansas City, MO Oct.
Meeting of presidents of western Canadian veterinary medical associations
Wildlife disease workshop organized by Susan Kutz, UVCM
University of Alberta animal health and learning workshop
University of Alberta retreat on veterinary research
University of Guelph workshop on ecosystem health
AVRI sponsored meetings/workshops (2) on epidemiology (UA) and infectious diseases
Presentation on the AAVMC Foresight Report by Norman Willis
University of Alberta seminar on “One Health” by David Sherman,
Advanced Education and Technology meeting on zoonoses prevention and control

Chair made presentations to, and consulted with:

AbVMA workshops on Economics, Viability and Sustainability of Veterinary Practice
Edmonton area veterinarians focus group
Calgary area veterinarians focus group
Lethbridge area veterinarians focus group
Vermillion area veterinarians focus group
Council of Medical Officers of Health (COMOH)
VetMed 21 Committee of the Alberta Veterinary Medical Association
Council of the Alberta Veterinary Medical Association
Alberta Veterinary Research Institute workshop on the “Veterinary Landscape”
Council of the Alberta Association of Animal Health Technologists
Alberta Association of Animal Health Technologists Annual meeting, Red Deer
Executive of the Alberta Association of Municipal Districts and Counties, Nisku
Canwest Veterinary Conference. Open meeting of veterinarians, Banff, Oct. 2005
Annual General Meetings (2006 and 2007) of the Alberta Veterinary Medical Association
Meeting and Workshop of Alberta Agriculture and Food Animal Health Strategy Steering Committee