Kim C. Klotins, DVM, DVSc (Epidemiology)_____

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Summary

- Graduate of the Ontario Veterinary College, University of Guelph
- Acting National Manager, Disease Control Contingency Planning, Aquatic Animal Health Division, Canadian Food Inspection Agency, providing National Aquatic Animal Health Program (NAAHP) direction for development and implementation of mandatory notification of aquatic animal diseases, disease response and domestic movement permits including consultation with partners and stakeholders of the NAAHP
- Veterinary Epidemiologist and Risk Assessor for the Aquatic Animal Health Division, Canadian Food Inspection Agency, providing risk analytical expertise and scientific advice to export, import, disease control, surveillance and research activities of the NAAHP
- Participant in the World Organisation for Animal Health (OIE) ad hoc Group on Safety of Products Derived from Aquatic Animals
- Training and experience in aquatic veterinary medicine including laboratory management, fish disease surveillance, and aquaculture and enhancement production systems
- Training and experience in epidemiological principles including risk assessments and infectious disease modeling
- Knowledge of Health of Animals Act and Regulations and OIE Aquatic Animal Health Code
- Expertise in critical appraisal and interpretation of scientific evidence
- Training and experience communications (effective writing and presentations)
- Effective project and planning management skills
- Self-motivator, professional and reliable; works independently or as part of a team. Maintains a network of national and international expertise and collaborators to draw upon.

Education

French: Oral and Written 2011 to present

Algonguin College, Ottawa, Ontario, K2G 3G7

I have completed Intermediate I. I will be continuing my training in September 2011 with the goal of taking the Government of Canada exams to obtain at least a BBB level, if not better, in French as a Second Language.

Doctor of Veterinary Science (Epidemiology) 1998 - 2003

Department of Population Medicine, Ontario Veterinary College, University of Guelph, Guelph, Ontario, N1G 2W1

This degree is similar to a PhD. Comprehensive exams, research thesis and an applied program are requirements for the degree.

- **Epidemiology I and II, Advanced Quantitative Epidemiology, Statistics for the Health Sciences**: Highlights include measurements of disease frequency, descriptive epidemiology, survey sampling, survey design and implementation, diagnostic and screening tests, and

surveillance and monitoring, and study design

- **Directed Studies in Epidemiology**: The knowledge gained focused on diagnostic tests and screening, clinical trials, evidence- based medicine and critical appraisal of the evidence, medical informatics, clinical decision-making, and assessment of heartworm testing in Canada
- **Safety of Foods of Animal Origin**: formal risk assessments on human health risk and control of hazards in foods of animal origin
- **Seminar Course on Oral Communication Skills**: presentation structure and organization, presentation style, use of audio-visual aids, and practice through departmental seminar series
- **University Teaching: Theory and Practice**: learner-centredness, instructional design, lecture/discussion, problem and case-based learning, lab/simulation/role-playing, collaborative learning, and assessment. I was a co-facilitator for the problem-based learning sessions at the Ontario Veterinary College

Doctor of Veterinary Medicine 1979 - 1983
Ontario Veterinary College, University of Guelph, Guelph, Ontario, N1G 2W1
Winner of the K-W Kennel Award for Proficiency in Small Animal Medicine and Surgery.

The Epidemiology of Infectious Diseases and Their Control Through Vaccination: A Veterinary Context 2001
This course was a hands-on demonstration of the modeling of epidemics and static and dynamic consequences of controlling infection, primarily vaccination and test and cull methods.

Technical Writing Workshop 2004
This workshop involved participation in writing various types of communications, learning through editing, and working on a group project.

Project Management: An Introduction to Concepts and Tools 2005
This workshop involved group work in the various phases of project management: concept, definition, planning, implementation and close-out.

Introduction to Molecular Epidemiology of Bacterial Diseases (Audit) 2005
This course provided an understanding of the basic principles of molecular genetics and the principal techniques used in molecular epidemiology, including principles of sampling and data analysis.

Quantitative Risk Analysis and Disease Modeling in Epidemiology 2007
A course offered by Vose Consulting that provided hands-on modeling of probability and risk, presentation of results, and modeling of disease spread (epidemic situation).

Managing for Success 2010
A course offered by the Canadian Food Inspection Agency (CFIA) that trains staff for responsibilities related to organizational, business, and human resources management. The successful completion of the course is required to obtain financial signing authorities within the CFIA.

Computer Experience

- **SAS**
- **Statistix**
- **Stata**
- **Epi-Info**
- **Model Maker**
- **QuattroPro**
- **Access**
- **Excel**
- **Reference Manager**
- **EpiData**
- **@Risk**
- **WordPerfect**
- **Word**
- **Internet/E-mail**
- **PowerPoint**

Selected Accomplishments and Skills

Management Actitivites

- Successfully completed CFIA's Managing for Success course.
- Development and implementation of the Mandatory Notification program for the NAAHP, including training. Implementation began in January 2011
- Consulted with partners and stakeholders on required amendments to the compensation regulations
- Provided advice and recommendations to senior management of CFIA on: amendments to the Health of Animals Regulations and Reportable Diseases Regulations; regulatory requirements/impingements to streamline federal responsibilities on aquatic animal disease management; CFIA's involvement with the Cohen Commission (Decline of Sockeye Salmon in the Fraser River); and response to mandatory notifications.
- Served as Acting Director for the AAHD when required.

Surveillance Activities

- Surveillance of antimicrobial susceptibility patterns in bacteria of clinical and zoonotic importance in cattle, poultry, swine, horses, goats and sheep. This is a collaborative project between the Ontario Ministry of Agriculture, Food & Rural Affairs (OMAFRA) and the Animal Health Laboratory, University of Guelph
- Development of a business case for an enhanced passive surveillance system for the Salmonella Typing Laboratory, Public Health Agency of Canada
- Assessment and improvement of data collection and data entry for the Salmonella Typing Laboratory's passive surveillance system, including an evaluation of the infrastructure of veterinary diagnostic laboratories across Canada and their ability to contribute to surveillance
- Assistance with the development of an active surveillance system in Canadian abattoirs for the Canadian Integrated Program of Antimicrobial Resistance Surveillance (CIPARS), Public Health Agency of Canada

Research/Project Activities

- Participant on the OIE ad hoc Group on Safety of Products Derived from Aquatic Animals (2008 to present).
- Occasional peer reviewer of research papers submitted to the journals Preventive Veterinary Medicine and Diseases of Aquatic Organisms.
- Member of the Fisheries and Oceans Canada (DFO) Canadian Science Advisory Secretariat Aquaculture Pathways of Effects Steering Committee (2008 to present).

- Member of the Centre for Aquatic Animal Health Research and Diagnostics Research Proposal Review Committee. Annually, this group reviews and funds proposed regulatory research projects to support the activities of the National Aquatic Animal Health Program (2007 to present).
- Steering committee member and organizer of the national conference "Agriculture's Role in Managing Antimicrobial Resistance - The Road to Prudent Use", Toronto Airport Marriott Hotel, ON, October 23-26, 2005
- Funding and oversight of the project 'Antimicrobial Resistance and Toxin Typing Patterns in *Clostridium perfringens* isolated from Swine, Cattle and Poultry', a collaboration between OMAFRA and the Animal Health Laboratory
- Funding and oversight of the project 'Prevalence of Salmonella in Grower-Finisher Swine Operations using Liquid Feeding Systems versus Dry Feeding Systems', a collaboration between OMAFRA, Department of Population Medicine, Animal Health Laboratory, and Biovet, Inc.
- Design and implementation of a multi-centre, matched case-control study to examine the association between vaccination and the development of a crisis of immune-mediated hemolytic anemia in dogs
- Development and pilot testing of a "Quality of Life Assessment for a Palliative or Hospice Plan of Care" survey, a "How Do You Think the Plan of Care is Working for Your Pet and You" assessment form and educational brochures ("Palliative and Hospice Care" and "Supporting your Palliative or Hospice Plan of Care") through the use of focus groups (veterinarians in tertiary and primary practice settings, social epidemiologists and sociologists)
- Applied for and received grants, totaling $17,000, to develop an education program for children, from kindergarten to Grade XII, for the Sunshine Coast Salmon Enhancement Society, R.R.#1, Field Site, C-23, Sechelt, B.C., V0N 3A0
- Developed and carried out the Salmon Ecology and Stewardship Educational Program for elementary and high school students that continues to this day. Brochure available upon request.
- Instituted a Stewardship Club at Chatelech High School, Sechelt, BC exploring salmon enhancement practices through spawning and egg incubation in the rivers, and through an exploration of water quality and watershed ecology
- Conducted a population survey of salmon parr in overwintering ponds using a capture/recapture method. The ponds were designed for the Sunshine Coast Salmon Enhancement Society on Chapman Creek to enhance the survival of salmon parr in the creek and this was an evaluation project of the success of these ponds
- Conducted analysis of the amount of erythromycin in salmon eggs using a microbiological plate technique as part of a project to control the vertical transmission of *Renibacterium salmoninarum* from infected Pacific salmon broodstock.

Communications Portfolio

1. Invited speaker at the 2nd International Aquaculture Biosecurity Conference, Advances in Practical Disease Prevention, Control and Eradication, August 15, 2011, Trondheim, Norway. I outlined the Canadian National Aquatic Animal Health Program and how it

contributes to biosecurity for the country.

2. Slavic D, Boerlin P, Fabri M, Klotins KC, Zoethout JK, Weir PE, Bateman D. 2010. Antimicrobial susceptibility of *Clostridium perfringens* isolates of bovine, chicken, porcine and turkey origin from Ontario. Submitted to Canadian Journal of Veterinary Research.

3. VHSV Expert Panel and Working Group. 2010. Viral hemorrhagic septicemia virus (VHSV IVb) risk factors and association measures derived by expert panel. Preventive Veterinary Medicine 94: 128-139.

4. Gustafson L, Klotins K, Tomlinson S, Karreman G, Cameron A, Wagner B, Remmenga M, Bruneau N and Scott A. 2010. Combining surveillance and expert evidence of viral hemorrhagic septicemia freedom: a decision science approach. Preventive Veterinary Medicine 94: 140-153.

5. CFCO Radio. Noon Hour Farm Show. Once a month. Example communications: September 22, 2004 [Antimicrobial Resistance – It is your business], November 3, 2004 ["Superbugs" in the Community – Can you spread them to animals and can animals spread them to you?].

6. Farzan A, Friendship RM, Dewey C, Warriner K, Poppe C, Klotins K. 2006. Prevalence of *Salmonella* spp. on Canadian pig farms using liquid or dry-feeding. Preventive Veterinary Medicine 73:241-254.

7. Antimicrobial Resistance - It is your business. A Resource Kit. 2004. Ontario Ministry of Agriculture, Food and Rural Affairs.

8. Klotins K. 2004. Antimicrobial Resistance in Agriculture. OMAFRA. FactSheet #04-081.

9. Klotins K. 2005. Antibiotic Use to Improve Growth in Livestock Production - Controversy and Resolution. OMAFRA FactSheet #05-041.

10. Klotins K. 2005. The Use of Acidifiers in Livestock Production to Improve Animal Growth and Control Unwanted Micro-organisms. OMAFRA FactSheet #05-043.

7. Klotins K, Richardson C, Sweeney S. 2005. Safe Storage of Unwanted Medicines and Sharps. OMAFRA FactSheet #05-053.

8. Klotins K, Richardson C, Sweeney S. 2005. Responsible Disposal of Unwanted Medicines and Sharps. OMAFRA FactSheet #05-051.

9. Pork News. 2004. Can we reduce multi-drug resistant Salmonella in swine production systems?

10. Marie Archambault, Anne Muckle, Kim Klotins. 2003. What is multi-drug resistant *Salmonella* Newport? Animal Health Laboratory Newsletter 7(4): 41.

11. Paul Innes, Kim Klotins, Marie Archambault. Salmonella and Antimicrobial Resistance: Some Guidelines for the Practitioner. CEPTOR – Animal Health News 11(3) (November 1, 2003), Veterinary Science Unit, OMAF. [http://www.gov.on.ca/OMAFRA/english/livestock/ceptor/2003/nov03a7.htm]

12. Drug Resistance Can be Minimized: Veterinarian Recommends Reduced Use of Antimicrobial Growth Promoters as a Good Place to Start. Interview with Lianne Appleby. Ontario Chicken Farmer. December 2003 (Issue 11): 2.

13. OMAFRA Poultry Producer Update Seminars, October 2003, April 2004, March 2006.

14. OMAFRA Market Lamb Seminars, November 2003.

15. Guest lecturer in the Department of Population Medicine, Small Animal Department (Internal Medicine), Clinical Studies and Department of Pathobiology, Ontario Veterinary College: interactive lecture on case-control studies for graduate students in epidemiology; designed, developed and administered semi-interactive lectures on evidence-based medicine, interpretation of diagnostic and screening tests, conducting clinical trials, including field trials and observational studies, and the critical appraisal of such studies for graduate students; conducted an interactive review of adrenocorticol function testing in dogs for hyperadrenocorticism, assessment of clinically useful cut-points and establishment of likelihood ratios

16. Klotins, KC. Palliative and Hospice Care in Veterinary Medicine. Chronic, Palliative and Rehabilitative Care. www.vetmedcenter.com. Atlanta, GA: VetMedCenter, Inc. [Last update: February 2001]

17. Klotins KC, Martin SW, Bonnett BN, Peregrine AS. 2000. Heartworm testing in Canada: are we being effective? Can Vet J 41:929-937

18. Karreman, GA and Klotins KC. 1991. Impact of Antibiotic Therapy in Fish Farming on Fish Silage and on Compost Produced from Fish Silage. Report and Recommendations for an ISTC contract to UBC. 33 pp

19. Country Canada. CBC Broadcast, October 1988. I starred in a documentary about veterinary involvement in fish farming

20. Gordon, M.R., K.C. Klotins, V.M. Campbell, and M.M. Cooper. 1987. Farmed Salmon Broodstock Management. B.C. Research, Vancouver, B.C. 152 pp

Work Experience

Acting National Manager, Disease Control Contingency Planning May 2010 to present
Aquatic Animal Health Division (AAHD), Canadian Food Inspection Agency

Primary goals achieved were: consultation with stakeholders and partners in 11 provinces on how to best achieve implementation of mandatory notification and disease response within the regulatory framework; development of two National Training Initiatives for training CFIA Veterinary Inspectors and Inspectors on how to receive and process disease notifications (completed Train the Trainer) and conduct initial inspections of premises when disease is suspected (Train the Trainer expected to begin in January 2012); completion of educational materials, such as the technical disease fact sheets, Q&A disease factsheets, and the Aquatic Animal Diseases brochure; and implementation of the mandatory notification program in January 2011, including creation of the AquaPIQ (information collection form) and AQUERS database. Substantial work was also completed or significant progress made on contingency planning (Aquatic Animal Health Functional Plan and formal agreements with partners and/or stakeholders on disease response) and licensing and zonation and domestic movement permit programs for upcoming consultations with provinces and territories.

Veterinary Epidemiologist, Risk Assessment December 2006 to present
Aquatic Animal Health Division (AAHD), Canadian Food Inspection Agency

Primary duties include development of a Risk Analysis policy and risk assessment procedures for AAHD. Conduct risk assessments for the Import/Export and Disease Control & Contingency Planning Sections of AAHD. Conduct country evaluations with respect to aquatic animal diseases of concern to Canada and the country's aquatic animal health infrastructure, including that of Canada. In addition, duties include liaison with federal/provincial/territorial partners and aquatic animal association to forward the work of risk assessment, such as the Aquatic Animal Health Committee (an advisory group for the National Aquatic Animal Health Program).

Participated in the development of the Health of Animals Regulations and Reportable Diseases Regulations regulatory amendments for the National Aquatic Animal Health Program (NAAHP). The NAAHP is a science-based program that follows the guidelines and standards set in the OIE Aquatic Animal Health Code. The legislative basis for this program is the Health of Animals Act, Health of Animals Regulations, Reportable Diseases Regulations, and other supporting regulations.

Participated in the development and implementation of surveillance in finfish for VHSV (viral hemorrhagic septicemia virus) in Canada and the USA (the surveillance document is a bilateral effort with the USDA: Surveillance Proposal for Viral Hemorrhagic Septicemia Virus In Freshwater Fish in Canada and the United States, Version 1.0). Development and implementation included liaison with the natural resource and agriculture departments of Ontario and Quebec, and the University of Guelph.

Participated in the development of the Aquatic Animal Health Functional Plan (disease response in the event of an aquatic animal disease detection or outbreak) and associated policies and procedures, particularly those associated with initial response, including design of an epidemiological questionnaire, and biosecurity associated with the active phase of the response.

Participated, as a lecturer, in the CFIA Veterinary Inspector training course, "Aquatic Animal

Medicine", held at the Atlantic Veterinary College, February 8-19, 2010. Prepared and presented course materials related to regulatory aquatic animal health for Canada.

Served as Acting Director, AAHD in 2009, and in this capacity I participated in the Canadian Council of Fisheries and Aquaculture Ministers - Canadian Food Inspection Agency Subcommittee meeting in November 2009 providing an update on NAAHP activities and the subcommittee's Market Access project. In addition, I participated in moving the NAAHP regulatory package towards publication in Canada Gazette, Part I.

Antimicrobial Resistance Specialist March 2003 to December 2006
Ontario Ministry of Agriculture and Food

Development of a resource kit "Antimicrobial Resistance in Agriculture – It is your business". Development and implementation of a communication and marketing plan for the resource kit. Development of a surveillance database of sensitivity testing results, in collaboration with the Animal Health Laboratory, to support prudent and judicious use of antimicrobials in agriculture. The first annual report describing trends from 1998 to 2005 is underway. The results will be reported to veterinarians and producers in ON. Development of a list of options for responsible disposal of on-farm generated medical waste for producer associations and the Ontario Veterinary Medical Association. Invited Chair of a conference session, Management of on-farm generated medical waste, at the 12th Annual International Conference on the St. Lawrence River Ecosystem. Invited guest speaker to producer seminars (poultry and sheep) and the CDC Get Smart: Know When to Use Antibiotics conference. Development and implementation of research projects, such as Salmonella prevalence in grower-finisher swine on liquid feeding system compared to swine on dry feeding systems and antimicrobial resistance patterns of *Clostridium perfringens* isolated from swine, cattle and poultry. Member of 6 national committees including those of the Veterinary Drugs Directorate, the Public Health Agency of Canada, and the 2005 Antimicrobial Resistance National Steering Committee to manage risk of antimicrobial resistance. Reviewer of research proposals for Poultry Industry Council and OMAFRA's Food Safety Program.

Veterinary Epidemiologist July 2002 to February 2003
Salmonella Typing Laboratory, Laboratory for Foodborne Zoonoses, Population and Public Health Branch, Health Canada.

Deliverables included development of a business case for an enhanced passive surveillance system, building the collaborations necessary to carry out the enhanced surveillance system, development of a poster about the surveillance system for presentations, development of a questionnaire to assess readership of the newsletter put out by the laboratory, development of a template for the newsletter as well as production and editing of the newsletter, and development of a training module on how to fill out the submission form.

Veterinary Epidemiologist December 2001 to May 2002
Antimicrobial Resistance Unit, Laboratory for Foodborne Zoonoses, Population and Public Health Branch, Health Canada.

Projects included: enhancing the passive surveillance program for the Salmonella Typing Laboratory through analysis of the current system, identification and implementation of improvements in data collection, and analysis and reporting; assistance with the active surveillance scheme for antimicrobial resistance in the agri-food industry by designing the sampling and testing schema; and initiating enhanced awareness of multi-resistant Salmonella in both the agri-food and public health domains by writing briefing notes and articles for newsletters.

Data Entry and Recoding November 2001
Data entry and recoding from questionnaires using EpiData for a public health laboratory survey conducted by Health Canada.

Senior Editor January 2000 - March 2001
Senior editor for VetMed Center, Inc. a company initially started by Drs. Larry Tilley and Frank Smith, Jr. The company has an information website (vetmedcenter.com) for use by veterinarians and consumers regarding all aspects of pet health and disease. I initially developed the introductory text on palliative and hospice care for pets. My on-going duties included a monthly editorial, monthly review of the relevant literature**,** monthly submission of case reports, and updates of the basic information.

Teaching Assistant Winter 2001
Graduate epidemiology course (81-621: Epidemiology II), Department of Population Medicine, OVC, University of Guelph, Guelph, ON, N1G 2W1. This was a cooperative course facilitated through videoconferencing between the Ontario Veterinary College and the Atlantic Veterinary College. Duties included support for the students for epidemiological and SAS concerns, marking assignments or developing the answer sheets for assignments.

Data Entry and Analysis June 2000-Mar 2001
Data entry verification from questionnaires and laboratory data using Epi-Info for a case-control study conducted by Health Canada and four provincial health departments on *Salmonella typhimurium* DT104. Data cleaning of the database (coding) and preliminary descriptive statistics (frequencies and tables) on variables of interest.

Teaching Assistant Fall: 1998 - 2000
Undergraduate epidemiology course (VETM-3570: Veterinary Epidemiology and Economics), Department of Population Medicine, OVC, University of Guelph, Guelph, ON, N1G 2W1. Duties included assisting with laboratory demonstrations and discussion groups on evidence-based medicine and critical appraisal of observational studies, diagnostic tests and clinical trials, and marking assignments and exams.

Veterinary Consultant and Practitioner 1990 - 1998
I offered a consulting and practitioner service to small animal clinics, and fish farming companies. Contracts have included locums in small animal clinics, including a permanent part-time position at the Eagle Ridge Veterinary Hospital (P.O. Box 1370, Sechelt, B.C., V0N 3A0),

autogenous Vibrio vaccine production for a private fish farming company, a review report on fish mortality composting with recommendations, as part of a larger research project being carried out by the University of British Columbia, and BKD (Bacterial Kidney Disease) screening using Elisa for a private fish farming company.

Aquaculture Veterinarian 1987 - 1990

I was employed by Aquarius Seafarms Ltd. as their veterinarian in charge of the Fish Health Department. My duties included diagnostics, and prescribing and assessing therapy in both the freshwater hatchery and the twelve saltwater sites; autogenous Vibrio vaccine production and administration; water quality analysis; devising and carrying out small-scale research projects; and maintaining a continuing education program for both myself and farm employees.

Research Assistant, Aquaculture Program 1986 - 1987

I was employed by B.C. Research, 3650 Wesbrook Mall, Vancouver, B.C., V6S 2L2, in the Aquaculture Program headed by Mr. Michael Gordon. While there, I co-authored a manual on salmon broodstock management, served as an extension officer to the fledgling aquaculture industry in a BCMAF-sponsored program, conducted research on vertical transmission of Bacterial Kidney Disease and possible prevention protocols, initiated an epidemiological study of BKD prevalence and incidence on saltwater farms, and wrote scientific papers for a private company for submission to recognized journals.

Veterinary Practitioner 1983 - 1986

Sydney Animal Hospital, 330 Welton St., Sydney, Nova Scotia (companion animals); Aaron and Guildford Animal Hospitals in Surrey, B.C. (small and large animals); Allondale Animal Hospital, 14715 108th Ave., Surrey, B.C (small animals).