Use of Animals In Science

Reflections of (40 years as) a University Vet

CAURA / CAREB
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Definitions

VET

(noun, informal): A veterinarian

(verb, transitive): To subject to veterinary evaluation, examination, medication, or surgery
To subject to thorough examination or evaluation;
to vet a manuscript (or a protocol or SOP)

(verb, intransitive): To engage in the practice of veterinary medicine

(noun, informal): A veteran
Definitions

Laboratory Animal Medicine

Laboratory Animal Medicine is primarily the practice of ‘animal welfare veterinary medicine’ for the animals used in research, teaching and testing.

The standards of Laboratory Animal Medicine are defined in the CALAM “Standards of Veterinary Care 2007” document.
Definitions

Laboratory Animal Veterinarian

“...the veterinarian, hired as he is by the institution and not by the animals, often will find himself in a delicate position.”

“...the veterinarian must have the courage – and it will require courage – to insist on standards that are absolute, and not relative to the pressures from within any institution.”


Laboratory Animal Veterinarians should conduct themselves as if they are hired by the animals, even though they are paid by the institution.
Definitions

Laboratory Animal Veterinarian

By meeting our responsibilities to the animals, laboratory animal veterinarians also play an important role at the University for faculty, staff and students, and for the public:

• Ensuring our university maintains its CCAC Certificate - Good Animal Practice
• Working to protect the faculty, staff and students, and the institution by minimizing potential risks and liabilities related to animal use
• Maintaining the public’s trust in the university, so the privilege to conduct animal-based research will be preserved, on behalf of research scientists
• Providing education in animal-based research
Definitions

**University Veterinarian** roles and responsibilities generally include:
- Senior position reporting to the Vice President Research
- Ensuring all animal care and use is conducted in accordance with standards
- Ensuring institutional adherence to laws and regulations pertaining to all animal use
- Leadership for the institution’s animal care and use program
  - ensuring the welfare and well-being of all animals; training programs for animal users; protocol review; coordination of all Canadian Council on Animal Care site visits; post-approval and compliance monitoring program; response to public and media inquiries

**Clinical Veterinarian**

**Attending Veterinarian**
1970

- Mr Les Read, manager of the Medical Research Annex facility, had passed away suddenly, 17 April 1970

- With Mr Read’s death, the possibility of hiring the first laboratory animal veterinarian at UofS arose

- Received a call from Dr Frank Loew, WCVM, asking if I would be interested in a job managing the University of Saskatchewan’s Medical Research Annex (which became the Animal Resources Centre in the early 1970s)
1970

- Mr Les Read, manager of the Medical Research Annex facility
Books – 1960s: Widespread Use of Pesticides; Intensive Housing of Farm Animals

- Documented detrimental effects of pesticides, in particular DDT, on the environment and on animals
- Argued that uncontrolled pesticide use was harming and even killing not only birds and other animals, but also humans
- Book and author condemned and ridiculed by the big chemical companies
- Credited with starting the environmental movement
Books – 1960s: Widespread Use of Pesticides; Intensive Housing of Farm Animals

• First book presenting a look inside intensive livestock housing systems “factory farms” and the impact on the welfare of the animals

• Laying hen battery cages; veal crates; white veal calves housed in darkness and kept anaemic; tethered hogs in small stalls

• “Life in the factory farm revolves entirely around profits, and animals are accessed purely for their ability to convert food into flesh or ‘saleable products’.”

• Reported on the widespread use of antibiotics, growth stimulants, hormones, etc., in livestock
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Saskatoon SPCA – 1960s

1968

Dog Distemper cases
Focusing on the Individual Animal re Distress, Pain and Suffering

Early 1970s

Considering Pain in Humans

“... There is no such thing as a sum of suffering, for no one suffers it. When we have reached the maximum that a single person can suffer, we have, no doubt, reached something very horrible, but we have reached all the suffering there can ever be in the universe. The addition of a million fellow-sufferers adds no more pain.”

Clive Staples Lewis - The Problem of Pain - 1940
Focusing on the Individual Animal re Distress, Pain and Suffering

... whatever we do, whether its clinical laboratory animal medicine, humane intervention points or pain monitoring, reading protocols, or developing SOPs or guidelines, these somehow have to ‘make sense’ right to the level of the individual animal.
The Canadian Standards for Experimental Animal Care and Use 1968

The Canadian Council on Animal Care (CCAC)

Some **Founding Principles**

- To ensure **uniform application of the guiding principles** at the national level and to assist local animal care committees in effective implementation
- Local **animal care committee structure** to **facilitate** conducting **animal welfare peer review** of all animal use
- **Representation from the public** at the CCAC level, and at the local animal care committee level
- **Rigorous control of the scientific merit** of animal based research by local, peer-based institutional animal care committees
The Canadian Standards for Experimental Animal Care and Use  1968 – 2010

The Canadian Council on Animal Care (CCAC)

The CCAC is Canada’s national agency responsible for setting and monitoring standards for the care and use of animals used in research, teaching and testing throughout Canada.

The Canadian standards for the care and use of animals in science are outlined in the guidelines and policy statements of the CCAC (www.ccac.ca).

The institution where the animals are used is responsible for implementing a program to ensure compliance with the Canadian standards.
The Canadian Standards for Experimental Animal Care and Use  1968 – 2010

The Canadian Council on Animal Care (CCAC)

CCAC Mission Statement

The purpose of the Canadian Council on Animal Care is to act in the interests of the people of Canada to ensure through programs of education, assessment and persuasion that the use of animals, where necessary, for research, teaching and testing employs optimal physical and psychological care according to acceptable scientific standards, and to promote an increased level of knowledge, awareness and sensitivity to relevant ethical principles.
The Canadian Standards for Experimental Animal Care and Use 1968 – 2010

The Canadian Council on Animal Care (CCAC)

1970s – CCAC program implemented across Canada
- Improvement of facilities a major thrust
- Animal care committees being created
- Interactions of local animal care committees with CCAC developing

1980s
- First major revisions of the CCAC Guidelines documents
- Assessment program enhanced
- Animal use protocol review more rigorous
The Canadian Standards for Experimental Animal Care and Use 1968 – 2010

The Canadian Council on Animal Care (CCAC)

1990s
• Guidelines program very active - creating guidelines on specific subjects
• CCAC office grows
• Assessment program has more assessment staff

2000s
• CCAC Guidelines, Education, and Assessment sectors active
• Institutions actively using animal user training programs
• Three Rs of humane animal experimentation a major focus of CCAC
• CCAC moves towards a ‘semi-regulatory’ status; standards mandated in some provinces
• Guidelines aim for ‘best practice’
The Canadian Standards for Experimental Animal Care and Use  1968 – 2010

The Canadian Council on Animal Care (CCAC)

CCAC Guidelines and Policies

The CCAC guidelines aim for the implementation of best practices.

Best practice guidelines based on:

- sound scientific evidence
- expert opinion
- undergone peer review
- adherence to ethical principles generally accepted by the public
The Canadian Standards for Experimental Animal Care and Use 1968 – 2010

CCAC Guidelines and Policies

1968 – first CCAC Guidelines
About 60 pages

2009 – CCAC Guidelines documents
More than 850 pages (total)
CCAC Guidelines on Endpoints 1998

CCAC guidelines on: choosing an appropriate endpoint in experiments using animals for research, teaching and testing

To the Table of Contents

The CCAC guidelines on: choosing an appropriate endpoint in experiments using animals for research, teaching and testing were developed by the ad hoc subcommittee on endpoints of the CCAC Guidelines Committee:

Dr Ernest Olbert, University of Saskatchewan (Co-chair)
Dr Jag Bhasin, National Research Council (Co-chair)
Dr Richard Latt, McGill University
Dr Eileen Macallum, Warner-Lambert Canada Inc.
Dr Kathie McCutcheon, University of Manitoba
Dr Don Rainnie, University of Prince Edward Island
Dr Michael Schunk, Pasteur Mérieux Connaught

The CCAC is also grateful to the many individuals, organizations and associations, that provided comments on earlier drafts of these guidelines.
CCAC Guidelines on Endpoints  1998 – UofS and VIDO Connection

1980s

- Since the 1980s, VIDO research scientists have been working on infectious disease models in livestock; developing vaccines for the major livestock diseases

- Concerned with minimizing suffering of infected animals

- Extensive collaboration of VIDO scientists and VIDO veterinarian with the UCACS laboratory animal veterinarian, to work out procedures and checklists for endpoints monitoring
CCAC Guidelines on Endpoints 1998 – UofS and VIDO Connection

1993

- Presentation to CALAS conference titled “Defining an Acceptable Endpoint in Invasive Experiments.”
- Based in part on work with VIDO to establish humane endpoints
1996 – 1998

- Invited to participate in CCAC endpoints guidelines committee
- Tabled first draft
- Assembly of committee
- Process for developing new guidelines evolved during this time

**CCAC guidelines on: choosing an appropriate endpoint in experiments using animals for research, teaching and testing**

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CCAC Guidelines on Endpoints 1998 – UofS and VIDO Connection

2006

• **CCAC guidelines on: choosing an appropriate endpoint in experiments using animals for research, teaching and testing,** became an **international reference document** recognized by the International Council for Laboratory Animal Science (ICLAS)

ICLAS is an international scientific organization dedicated to advancing human and animal health by promoting the ethical care and use of laboratory animals in research worldwide.

Endpoints Guidelines

• In experiments involving animals, any actual or potential pain, distress, or discomfort should be minimized or alleviated by choosing the earliest endpoint that is compatible with the scientific objectives of the research.

• More recently called ‘Humane Intervention Points’
Laboratory Animal Science – Forty Years of Progress

1970s

• Animal caging mostly ‘home-made’

• Researchers often raising their own animals and caring for them

• Dogs obtained from municipal dog pounds
Laboratory Animal Science – Forty Years of Progress

1970s
Laboratory Animal Science – Forty Years of Progress

1970s

• Diseases of laboratory animals very common
  serious impacts on quality of research

• Clinical veterinary laboratory animal medicine
  and pathology very important

• Few laboratory animal veterinarians
  in early ‘70s

• Training programs for laboratory
  animal care staff began (CALAS)
Laboratory Animal Science – Forty Years of Progress

1980s

- **Disease control** a major thrust for caging and facilities: optimal ability to clean, sanitize

- Stainless steel everywhere! Shinier the better!

- Commercial suppliers ‘cleaning up’ their animal production colonies (SPF animals), and as a result the health quality improved
Laboratory Animal Science – Forty Years of Progress

1980s

• Myth: That ‘clean’ surgery in rodents was acceptable due to their remarkable resistance to infection

• Before 1980, belief was that for experimental surgery in rats and mice, sterile technique was not necessary
Laboratory Animal Science – Forty Years of Progress

1980s

- Animal Welfare Science emerged as a scientific discipline; research area
  - defining behavioural needs
  - defining stress, distress
  - measuring stress, distress
  - testing methodologies (preference tests, aversion tests)
- Animal welfare science applied to experimental animal housing, handling and procedures
1990s

- Small experimental animal caging becomes ‘hi-tech’
- High health status rodents (virus free) rigorous monitoring of health status
- Facilities /caging / SOPs to maintain health status
Laboratory Animal Science – Forty Years of Progress

1990s

- Dramatic increase in use of genetically modified rodents
- New animal models developed almost daily
- Thousands of genetically modified mice and rat strains available, today
Laboratory Animal Science – Forty Years of Progress

1990s

• Meeting the animal’s comfort needs

• Meeting behavioural needs

• “Enrichment” in laboratory animal housing widespread
Laboratory Animal Science – Forty Years of Progress

1990s

• Addressing pain and distress in experimental animals

• Clinical veterinary skills directed to monitoring for pain / distress, endpoints, regular use of analgesics
Laboratory Animal Science – Forty Years of Progress

2000s

• Highly trained, skilled, professional people supporting researchers using laboratory animal facilities

Registered Laboratory Animal Technicians have:
• an animal science education
• specific training in the care and use of laboratory animals
• on-the-job practical experience

Registered Laboratory Animal Technicians offer higher quality animal care. Technicians with enhanced knowledge in laboratory animal science dramatically improve the quality of animal care in Canada.
Laboratory Animal Science – Forty Years of Progress

2000s

- Rapid developments in technology continue
- Biocontainment / bioexclusion capabilities excellent
  Biosafety and Biosecurity standards high
- Continued emphasis on SOPs
- CALAM/ACMAL Standards of Veterinary Care document updated
Laboratory Animal Science – Forty Years of Progress

2000s

The University Committee on Animal Care and Supply (UCACS)

Our comprehensive animal care and use program has six major areas of responsibilities:

• Ensuring all proposed animal use receives ethics review and approval before the research starts
• Ensuring all animal use is in compliance with UCACS polices, and national standards
• Ensuring all persons working with animals are properly trained and qualified
• Ensuring high standards of care for the animals
• Ensuring adequate veterinary care for the animals
• Ensuring adequate facilities for housing the animals
Laboratory Animal Science – Forty Years of Progress

2000s

The University Committee on Animal Care and Supply (UCACS)

• Institutional animal care and use program comprehensive, complex

• More administrators hired specifically to manage the increasing bureaucracy
  • Expectations of the Tri Council granting agencies
  • Expectations of the CCAC: more and longer guidelines and policy documents; more documentation required; assessments more ‘regulatory’
  • Ethics review standards
  • Biosafety legislation and regulation, and oversight
  • Attention to risk management
  • ‘Paperwork’ at all levels

• Growing researcher discontent with increasing bureaucracy and paperwork
The Animal Research Ethics Board (AREB) ‘Paperwork’

The Animal Use Protocol (AUP) forms

1984 – Assurance of Animal Care form
One page long

2009 – Animal Use Protocol form
12+ pages long
10 different forms for specific uses
Laboratory Animal Science – Forty Years of Progress – Summary Statement

1968 – 2010

• Amazing improvements in standards for the welfare, care and use of experimental animals over the last forty years

• Canadian standards for experimental animal care and use have become one of the highest in the world; CCAC model used by other countries

What will the next 25 years bring? 2010 – 2035

• ?? Will experimental animal care and use standards continue to improve at the same pace in the next forty years?

• ?? Will more ‘bureaucracy’ surrounding the administration of animal care standards add any value to the welfare of the animals used?
Evolution of Public Attitudes to the Use of Animals in Science

1920s

- Public concern about sources of the dogs used by Banting and Best in their insulin research, at the University of Toronto, 1920s

- Public participation in all aspects of the CCAC is one of the cornerstones in the CCAC program
  - At the CCAC level: through Canadian Federation of Humane Societies
  - At the animal care committee level: through community representatives
Evolution of Public Attitudes to the Use of Animals in Science

Two events figured strongly in the rise of the modern animal rights movement, and a new focus on the ethics of use of animals in science

1975
Publication of the book: *Animal Liberation – A New Ethic for Our Treatment of Animals*, by Peter Singer

1981
The Silver Springs Monkey case
Evolution of Public Attitudes to the Use of Animals in Science

1975, Peter Singer

- Strong case for Utilitarian philosophical concept: The only measure of ethical behaviour is the ‘most good for the greatest number’
- Costs vs. Benefits analysis
- In this analysis, the interests of all beings capable of suffering are worthy of equal consideration (with humans)
- Level of intelligence or language are not reasons to withhold equal consideration
Evolution of Public Attitudes to the Use of Animals in Science

1975, Peter Singer

- To not give equal consideration is “species-ism” - discrimination on the basis of belonging to a certain species (related to racism, or sexism)

- Strong opposition to animal research, arguing that the costs of the harm caused to animals outweighs any benefit that might come from the research
Evolution of Public Attitudes to the Use of Animals in Science

The Case of the ‘Silver Spring Monkeys’ - 1981

Animals: 17 wild-born macaque monkeys
Research Scientist: Dr Edward Taub
Research: Studying deafferentation and neuroplasticity
Place: Inst of Behavioral Research, Silver Spring, Maryland

Alex Pacheco, ‘volunteer’ graduate student, later identified as a member of the new animal rights group PeTA working undercover, brought police pictures he’d taken of the monkeys

The 17 macaque monkeys became the “Silver Spring Monkeys”

Dr Taub was the first research scientist to be charged with cruelty to animals and taken to court. Eventually convicted of 6/113 charges; later overturned

Ensuing publicity helped transform PeTA into a high profile international animal rights organization
Evolution of Public Attitudes to the Use of Animals in Science

Annual ‘income’ more than $30 million
Evolution of Public Attitudes to the Use of Animals in Science

The StarPhoenix

Friday 29 August 2009

http://www.thestarphoenix.com/

Trauma Training on Pigs Criticized

A Saskatchewan medical training course is under fire for its practise of using live pigs to teach residents and doctors how to do trauma procedures.

The Physicians Committee for Responsible Medicine plans to file a complaint early next week with the Canadian Council on Animal Care against the University of Saskatchewan for using and killing live pigs in the course of teaching doctors how to treat medical trauma cases. Queen's
Evolution of Public Attitudes to the Use of Animals in Science

UBC fears animal activists' campaign

BY JANET STEFFENHAGEN, VANCOUVER SUN  AUGUST 12, 2010

Animal-rights activists have started a campaign to raise awareness about the "grim realities" of University of B.C. animal research, which they say have been hidden from the public for years even though the work is funded by taxpayers.

The campaign is worrying UBC officials, one of whom said he is afraid it could lead to violence because "there are nuts out there."

"Few local residents are aware that UBC has such an extensive research program," campaign organizer Brian Vincent told The Vancouver Sun. "Unfortunately, UBC has been less than forthcoming about its research activities.

"The public has the right to know that their tax dollars are paying for highly invasive research on animals, including experiments on cats."

Veterinary college butting heads with animal group

By Doug Hallett, Guelph Tribune

News

Aug 03, 2010

The Ontario Veterinary College has changed its policy of euthanizing beagles after surgery in a special program on campus, but an animal rights organization says the university isn't going far enough in improving animal treatment.

The policy change means beagles will no longer be routinely euthanized by foreign-trained students in the program after the dogs are spayed or neutered, said university communications director Chuck Cunningham. Instead, OVC plans to adopt the beagles out through an adoption program it already runs.

The policy change was made in recent days following a months-long review, Cunningham said in an interview Friday.

It means 10 young, female beagles in this year's program that haven't been operated on yet will be adopted out in a few weeks. Another 10 dogs in this year's program that were operated on earlier have already been euthanized, he said.

Additional resources will be added to the program's surgical aspect to make it possible to adopt the beagles out after surgery, Cunningham said.

"In order to make it happen, there are going to be additional surgical supervisors working with the trainees to ensure that all surgical procedures go according to plan," he said.
Evolution of Public Attitudes to the Use of Animals in Science

Canadian Survey 1988

“Scientists should be allowed to do research that causes pain and injury to animals like dogs and chimpanzees if it produces new information about human health problems. Do you strongly agree, agree, disagree, or strongly disagree?”

- 7% Strongly Agreed
- 36% Agreed
- 8% were Undecided
- 29% Disagreed
- 20% Strongly Disagreed
Evolution of Public Attitudes to the Use of Animals in Science

Swedish Survey 2008

80% of respondents thought animal experiments would be acceptable under certain conditions:

• If it involved medical research
• If it involved very serious or severe diseases
• If there were no other options (i.e. animal experiments are the ‘last resort’)
• If the animals did not suffer

In 1992, 70% of respondents had the same opinions
Evolution of Public Attitudes to the Use of Animals in Science

Factors Influencing Opinions on Use of Animals in Science

- Purpose of research (finding a cure for a disease vs. cosmetics testing)
- Assurance that animals will not suffer or feel pain
- Kind of animal (rat vs. dog or monkey)
- Gender (male vs. female)
- Education level
- Vegetarian
Evolution of Public Attitudes to the Use of Animals in Science

Swedish Survey 2008

• Where did respondents get their information about animal experimentation?
Are There Any ‘Morals’ in this Reminiscence?

• Each animal used in science is an individual capable of distress, pain and suffering

• You will make an impact on the welfare of the animals used in science

• Stay involved with your animal care and use program – work to make sure animal welfare concerns always come first, and not the ‘bureaucracy’

• The public is concerned, is interested, and is watching

• Communication about the value of science and contributions of animals is very important
The first dean of the College of Agriculture – William J Rutherford – was a great fan of Clydesdale horses, and arranged for the UofS to raise and use them at the university.

**Bonnie Buchlyvie** was the son of one of the most famous Scottish Clydesdale horse sires from the early 1900s, and the brother of a Clydesdale sire bought by UofS in 1919. Bonnie Buchlyvie was bought on behalf of a farmer from Arcola Saskatchewan (Mr Bryce) but Bryce died before the horse was to be shipped to Canada from Scotland.

Former U of S president George Ivany commissioned Saskatchewan artist Joe Fafard to create the sculpture in 1999.