

A PROPOSAL FOR CANADA'S NATIONAL CHRONIC WASTING DISEASE CONTROL STRATEGY (2011)

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Canadian Cooperative
Wildlife Health Centre

A Proposal for Canada's National Chronic Wasting Disease Control Strategy (2011)

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INTRODUCTION

Project Background

Chronic wasting disease (CWD) is an infectious prion disease of North American cervids. This fatal neurodegenerative disease is known to affect mule deer (*Odocoileus hemionus hemionus*), white-tailed deer (*Odocoileus virginianus*), black-tailed deer (*Odocoileus hemionus columbianus*), Rocky Mountain elk (*Cervus elaphus nelsoni*) and moose (*Alces alces shiras*).

In October 2005, *Canada's National Chronic Wasting Disease Control Strategy* was prepared for the Federal-Provincial/Territorial Resource Ministers Council by the Technical Working Group assembled under the Inter-Agency Oversight Committee (IOC) for Chronic Wasting Disease. The objective of the strategy was to establish a coordinated national policy and a disease response and management framework, with the ultimate objective being the eradication of CWD.

In 2011, a two-step process was held to revise and update the strategy.

In February 2011, an information sharing workshop was convened in Edmonton, Alberta, to generate a full picture of developments since 2005 in CWD science and management in wildlife and agriculture, the social and economic impacts of CWD, and the implications for public health. At the workshop, U.S. state and Canadian provincial CWD management experts and researchers reported that there has been significant spread of the disease in both farmed and wild cervids through Saskatchewan, into Alberta and perhaps beyond. Practitioners described the difficulty of designing programs to control CWD in wild cervids, especially when these involve culls or other measures that the public and hunters find difficult to support. Additional reports indicated that CWD eradication from farmed cervids has proven costly and had limited success. It was noted that these developments and challenges have led state, provincial and Canadian federal officials to consider control rather than eradication as an objective of their programs.

Since 2005, new knowledge on the spread of CWD within herds by age and gender, as well as geographically, for example along river basins, has emerged. Research is also improving our understanding of how the disease may spread between farmed and wild populations. These insights may lead to improved disease control methods in the short and medium term, while observations on genetic susceptibility of host species and the impact of environmental factors on the disease agent may lead to new approaches to disease control in the longer term. Workshop participants also heard from a representative of the Public Health Agency of Canada and other speakers concerning expert views on the possibility that CWD might be transmitted to humans, including the possibility that this risk could evolve with the changes to the agent itself and its spread in wild or farmed cervids.



INTRODUCTION

A report on the Edmonton workshop is available at http://www.ccwhc.ca/article_cwd_report.php.

In April 2011, a workshop was held in Saskatoon, Saskatchewan, to review and revise the 2005 National Chronic Wasting Disease Control Strategy based on the outcomes of the Edmonton workshop. *A Proposal for Canada's Chronic Wasting Disease Control Strategy (2011)* is the outcome of that workshop, as well as subsequent review and input by workshop participants.

The process for the revision of the National CWD Control Strategy was designed and organized by the Headquarters Office of the Canadian Cooperative Wildlife Health Centre (CCWHC) with the support of federal, provincial and territorial public servants charged with managing the various aspects of CWD in wildlife, agriculture and human health agencies. The Alberta Prion Research Institute and PrioNet Canada worked closely with the CCWHC and underwrote the cost of the workshops, including all logistics and arrangements.

Adoption of the National CWD Control Strategy as National Policy

For *Canada's National Chronic Wasting Disease Control Strategy (2011)* to become government policy and serve Canadian society, it will need to be advanced as a policy initiative by senior managers in the federal, provincial and territorial ministries responsible for wildlife, agriculture and human health. To bring this Strategy to the attention of such managers, the CCWHC, in its role as coordinator and architect of the revision process on behalf of Canada's CWD managers, proposes to offer this revised Strategy for consideration to three federal-provincial/territorial policy forums, the Canadian Wildlife Directors Committee, the Council of Chief Veterinary Officers, and the Council of Chief Medical Officers of Health, with the request that each review the Strategy as a policy document, propose clarifications or revisions, and determine how each group will facilitate its implementation as national policy.

The CCWHC is committed to working with these groups to ensure that the proposed Strategy (or a suitable alternative) is implemented.

Governance of the National CWD Control Strategy

No one government or ministry can be responsible for the overall management of chronic wasting disease in Canada. The successful implementation of *Canada's National Chronic Wasting Disease Strategy (2011)* will require the commitment and involvement of a wide range of government and non-government interests, including wildlife, agriculture and human health departments and agencies at federal, provincial and territorial levels and aboriginal, farming and academic groups.



INTRODUCTION



The purpose of a governance structure for the Strategy is to permit government units with legislated authority for aspects of CWD management to coordinate their planning, activities and the use of their resources horizontally and vertically and to make effective linkages with non-government units which have essential roles to play in the implementation of the Strategy. Transparently collaborative co-management of the activities carried out under the Strategy is essential to achieving the Strategy's goals in the Canadian context in which no single agency or small group of agencies is legally in charge but in which many have legal responsibilities and may be held accountable for their actions to protect Canadian society from CWD.

Initiatives to Move Forward

If *Canada's National Chronic Wasting Disease Control Strategy (2011)* is adopted as national policy and implemented, there are several important initiatives that will require close coordination and much attention to move forward. A partial list of these includes:

- Coordination of governance activities.
- Regular¹ review of Strategy implementation and relevant new science.
- Regular¹ review of design and outcome of CWD management activities.
- Creation of consensus guidelines on importation, exportation and within-Canada movements of cervids and cervid parts.
- A national assessment of human exposure to CWD prions.
- Establishment of a program to obtain and map all data from CWD surveillance in Canada.
- Creation of a consensus document on best practices for responses to CWD occurrences, with review and updating every 2 to 3 years¹.
- Systematic epidemiological analysis of each new occurrence of CWD.
- Dialogue with research funding agencies on priority research areas to enable CWD management.
- Establishment and management of a communications plan.
- Coordination of risk communication.

¹ Proposal is every two years, initially.



EXECUTIVE SUMMARY



The objective of *Canada's National Chronic Wasting Disease Control Strategy (2011)* is to establish a coordinated national policy and disease response and management framework to minimize the known and potential negative impacts of Chronic Wasting Disease (CWD) on biodiversity, livestock and human health, the environment and the economy, including the social and cultural impacts of the disease. The ultimate objective of this Strategy is eradication of CWD from Canada or, failing this, the tightest possible control of CWD so that it does not spread to new geographic areas or to new species and so that its environmental, economic, social and public health impacts are minimized.

Successful implementation of the Strategy would require the collaboration and commitment of the federal, provincial, territorial, aboriginal, regional and municipal governments, Canada's animal and human health research communities, and non-governmental wildlife, environmental and agricultural organizations as well as citizens.

The policies and activities arising from the Strategy are based on principles of full and open collaboration; use of the best available science; close vertical and horizontal integration among jurisdictions; the careful and strategic investment of resources; adaptive management through regular review and evaluation of the effectiveness of programs and activities; and goals that are realistic in terms of existing knowledge and economic circumstances.

The six goals of the Strategy are:

1. Prevention of further expansion of CWD to new locations or species and the prevention of emergence of new forms or variants of CWD
2. Effective surveillance for CWD
3. Planned management and response program
4. Research in support of CWD management
5. Education and Training
6. Communication and Consultation





The Strategy is based on the following six principles:

- 1. Collaboration:** Effective development and implementation of the Strategy requires building new partnerships and maintaining full and open collaboration and communication, including proactive sharing of data and information among participants.
- 2. Science Based:** The Strategy and supporting policies and regulations must be informed by current knowledge of the veterinary, wildlife, biomedical and social sciences communities and adjusted as new knowledge emerges, and they must draw upon traditional aboriginal knowledge.
- 3. Integration:** Responsible authorities will ensure their CWD policies and programs are aligned with those of the Strategy in order to promote a common, horizontally and vertically integrated, national CWD management approach by the jurisdictions concerned, including any First Nations and Inuit governed land areas.
- 4. Strategic Investment:** Action plans to implement the Strategy will build on existing programs, infrastructures and policies where possible. Resources will be invested strategically, to enhance programs and fill priority gaps as required to achieve the Strategy's goals.
- 5. Adaptive Management:** Implementation will evolve through repeated sequences of consultation, planning, implementation, review and revision. Regular review and evaluation of program effectiveness is integral to the Strategy.
- 6. Achievable:** The Strategy must be realistic considering existing knowledge as well as social and economic circumstances.



CHALLENGES



Important challenges will be faced in achieving the Strategy's goals. Among these are:

- CWD continues to expand in distribution and prevalence, with important impacts on Canadian ecosystems and risks to biodiversity and society.
- The socio-economic impacts of CWD are large and complex, with known and potential impacts on wildlife conservation and management programs, aboriginal economies and cultures, agriculture, nature-based industries, food safety, nutrition and human health. There are significant uncertainties associated with important questions regarding the direct effects of CWD on food safety and human health, and on the potential ecological effects of CWD.
- CWD issues involve multiple government departments and agencies across federal, provincial and territorial jurisdictions as well as aboriginal, regional, municipal and non-governmental communities and organizations. This complexity demands effective consultation, collaboration and communication.
- The programs and approaches for CWD control that have been and are currently used exceed the capacity of participating agencies. Approaches need to be developed that will be compatible with available resources.
- There is a limited "toolkit" of management options; some options, such as extensive culls, have proven to be socially unacceptable, and would be more so were a National Park involved.
- The biology of CWD is poorly understood, including the transmission of the disease and susceptibility of different species.
- International trading partners view CWD as an important North American problem and some view Canada as an exporter of the disease.
- Participants in the Strategy are committed to meeting these challenges and achieving the Strategy's goals.



GOALS OF CANADA'S NATIONAL CWD CONTROL STRATEGY



Ultimate Objective: The ultimate objective of Canada's National CWD Control Strategy is eradication of CWD from Canada or, failing this, the tightest possible control of CWD so that it does not spread to new geographic areas or new species, and so that its environmental, economic, social and public health impacts are minimized.

Goal 1: Prevention of further expansion of CWD to new locations or species, and prevention of the emergence of new forms or variants of CWD.

Reduce the risk of further emergence of CWD through improved interception at control points, supported by epidemiological analysis and a strengthened knowledge base.

Key Components:

1.1 Controls of importation, exportation and inter/intra-provincial/territorial movement of cervids and cervid parts

- Provinces/territories and aboriginal jurisdictions that do not have existing controls on importation of cervid/cervid parts, including baits/lures, to develop such regulations or other control mechanisms, such as guidelines.
- Provinces/territories and aboriginal jurisdictions with existing regulations need to assure enforcement.
- CFIA to continue a review of its policies for CWD, including the concept of zoning, provision of cervid movement permits and adjustment of the voluntary CWD herd certification program.

1.2 Reduce risky practices

- Provinces and territories to develop regulatory restrictions or other measures to reduce the feeding and baiting of cervids.

1.3 International CWD intelligence and information analysis

- Regular monitoring of CWD occurrences which could be potential threats to Canada will inform surveillance and importation control programs.

1.4 Scientific research on epidemiology and disease emergence will be required (See Goal 4)



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1.5 Predict and monitor potential human health risks of CWD

- Develop a governance structure for national CWD management that ensures effective linkages within and between the health portfolio and with animal and environmental health agencies.
 - Public Health Agency of Canada (PHAC) to establish a working group or other mechanism for coordination of CWD activities using a “One Health” approach spanning the animal health, human health and ecosystem health sectors.
- Strengthen understanding of the potential risks to human health by monitoring human exposure to CWD prions, whether through food or other possible routes of transmission, and through research on human susceptibility (Goal 4).
 - Assemble and analyze data on potential exposure of people in Canada to CWD prions, including at-risk groups such as aboriginal people, other hunters and outfitters, other consumers of affected cervids, taxidermists and abattoir workers.
 - » PHAC to lead in arranging data gathering and sharing.
 - Undertake a broad risk assessment of the potential short-, medium- and long-term impacts of CWD on human health, social and cultural needs, economics and general well-being, and on the Canadian environment.
 - » Integrate this risk assessment with disease transmission and population impact models developed for wild cervid populations.

Goal 2: Effective surveillance for CWD

Promote early detection of CWD in cervid populations to maximize the effectiveness of control measures and minimize costs and economic losses. This requires vigilant CWD surveillance supported by effective scientific methods and facilities.

Key Components:

2.1 A national network of CWD detection and laboratory diagnosis

- An effective, integrated and coordinated surveillance network is essential to the Strategy.
- Promote cooperation and, where appropriate, the sharing of resources among agencies and jurisdictions to ensure that there are no significant gaps in coverage.
- Use existing networks, such as the Canadian Cooperative Wildlife Health Centre (CCWHC) and the Canadian Animal Health Laboratory Network (CAHLN).
- Expand and formalize linkages to human health agencies and research, for example through Health Canada funding and support for creation of a CWD module within the Canadian Animal Health Surveillance Network (CAHSN).



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- Enable better integration of aboriginal people into the surveillance program to incorporate their capacity for vigilance for wildlife diseases and to broaden understanding of wildlife and the environment.
- Improve detection and diagnostic systems for use under field or local laboratory conditions, possibly including mobile laboratories.

2.2 Information management

- Databases and information analysis and data sharing protocols will be developed to ensure timely interpretation and distribution of CWD surveillance information to all relevant participants.
- Canadian data on CWD occurrences and surveillance in all sectors will be collated and mapped on an on-going basis and made available to responsible agencies and the public in forms appropriate to the needs of each.
 - o Make use of available mapping and data-management capacities such as the PHAC-CCWHC partnership for rabies surveillance, Canadian Network for Public Health Intelligence (CNPHI) and CAHSN.
 - o Develop data sharing arrangements among all Canadian data sources of CWD occurrence and surveillance.
 - o Share data with appropriate agencies in the United States to achieve accurate continental maps and data on CWD.

2.3 Scientific research will be needed to support surveillance and laboratory methods (see Goal 4)

2.4 Develop a consensus “best practices” document to guide CWD surveillance in Canada

- Organize best practices around three categories of CWD occurrence: active/enzootic areas; newly detected areas; and at risk areas.
- Design information so that it is adaptable to different jurisdictions and to changes in understanding of the disease.





Goal 3: Planned management and response program

Develop an integrated, reasoned, and planned management and response program for current and new occurrences of CWD.

Key Components:

3.1 Disease Control

A. Design measures to contain and reduce the occurrence of CWD with a view to possible future eradication

- Create a compilation of best practices to serve as guidelines for management of and responses to CWD:
 - o Include management or response plans for three categories:
 - » areas in which CWD is enzootic in wild cervids;
 - » areas in which CWD is newly detected in wild, captive or farmed cervids; and
 - » areas in which CWD is not known to exist in wild, captive or farmed cervids.
 - o Develop the concept and required definitions for a proposed zoning strategy to control CWD in farmed or captive cervids (CFIA to lead).
 - o The compilation of best practices will be a “living document” subject to regular review when the Strategy itself is reviewed.
 - o The best practices guidelines should include guidance on the safety/handling of cervid products for the consumer whether aboriginal, subsistence, hunter or commercially slaughtered animals.
 - o The design of management and response programs will rely heavily on mathematical models of CWD transmission and population impacts and on risk assessments.
 - o The best practices guidelines must take into consideration the potential negative impacts of CWD, costs of management options, likelihood of success of management methods, and potential negative impacts of the management actions themselves.
 - o Recent advances in the wildlife, biomedical, and social sciences, and local knowledge will be applied to CWD management objectives to ensure sound and acceptable procedures to reduce the impact of CWD in Canada.
- Conduct appropriately detailed and systematic epizootiological reviews of each new occurrence of CWD in captive or wild cervids or any other species.



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B. Field response capacity

- Personnel and equipment required for a range of possible CWD response scenarios will be identified, coordinated and educated, as needed, to assure sufficient capacity to respond to and manage CWD occurrences, particularly new occurrences for which responses may be urgent.
 - o Sufficient to meet the best practices guidelines.

3.2 Scientific research is needed to close critical knowledge gaps (see Goal 4)

3.3 Decision and communication plan

- Pre-planning by all relevant jurisdictions.
 - o Establish mechanisms to identify the lead agency for a coordinated response to a CWD occurrence.
 - o Formalize plans for public communication (especially for occurrences in new species and new geographic areas) (see Goal 5).

Goal 4: Research in Support of CWD Management

4.1 Research is required to support all aspects of the Strategy, as follows:

Knowledge gaps affect all aspects of CWD management. The Strategy must include substantial investment in research, and control measures should be designed with sufficient controls and data gathering to allow scientific assessment of their effectiveness.

The following were identified as research issues that must be addressed if CWD is to be controlled and its impacts on Canadian society reduced. Each research issue addresses knowledge gaps currently impeding achievement of one or more of the goals of the Strategy. The goals supported by each research topic are given in parentheses at the end of each.

- **CWD in Cervids**
 - o Parameterized and spatially-explicit models of CWD transmission and of its potential impacts on cervid populations are required as a support for all further research on control and management of CWD. Such models should incorporate real data on behavior, social interactions, and use of habitats and landscapes by healthy and affected animals, shedding of infectious prions, and interactions with contaminated environments (1,2,3).



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- o A diagnostic test that will reliably detect CWD in live animals early in the course of the disease is greatly needed to control CWD in captive and farmed cervids; basic pathobiological research aimed at such a test is required (2,3).
- o Management experiments with appropriate controls and analyzable results are required to assess the effectiveness of CWD control procedures (population control, vaccination, selective culling based on live animal testing) (3).
- o Human dimensions of the implementation of CWD control programs require dedicated research. Successful control of CWD will require engagement of many segments of the public, including aboriginal communities, and will fail if such engagement is not undertaken. The social parameters for successful program implementation must be established and then followed (3).
- o A vaccine protective against CWD could be a feasible and potentially beneficial tool for control of CWD in wild populations. A vaccine and methods of vaccination of wild populations (such as oral vaccination) should be developed, using mathematical models of CWD transmission to establish the parameters of a vaccine that would have the potential to control CWD (1,3).
- **Environmental and Ecosystem Dimensions of CWD Management**
 - o The broad ecological effects of CWD on animal, plant and human communities have not been assessed or modeled. Such modeling overlaps with, but is separate from, models of effects on cervid populations and risk assessments of human well-being. Local ecological knowledge is an important dimension of such research and must be fully incorporated. Concepts of cause, effect and natural healing processes unique to various affected human communities also must be incorporated (1,3).
 - o Detection of CWD prions in the environment may be essential to CWD management, to identify environments that may serve as sources of infection to animals or people. Basic and applied research is required to develop methods that are practical, sensitive and cost-effective (2,3).
 - o Research into the interaction of CWD prions with environmental variables such as soil minerals, pH, water, solar radiation and other factors is essential to determining the importance and duration of environmental contamination in the natural transmission and perpetuation of CWD in all environments (1,2,3).
 - o Treatments to inactivate or destroy CWD prions in the environment are greatly needed to control CWD. Basic and applied research on such treatments is thus essential to eventual control of CWD (3).





- **Human Health**

It is clear that significant social and economic impacts arise for the individuals and communities whose animals are affected by CWD. Much uncertainty exists about the zoonotic potential of this disease.

The uncertainty about the zoonotic potential of CWD needs to be addressed:

- o The basic pathobiology of the CWD prion, its multiple strains and its interaction with human prion protein must be fully explored to determine whether or not CWD may be transmissible to people, and to be able to detect CWD in people should it occur (1,3).
- o Surveillance methods for potential CWD infection in humans must be improved through research on laboratory and epidemiological methods (1, 2, 3).

The social and economic issues also need to be addressed:

- o The economic risks posed by CWD represent an important component of potential impact on human well-being and require socio-economic research to assess and model (1,3).

Integrated approaches are needed:

- o The full range of potential risks to human society posed by CWD in Canada require in-depth research and assessment through broad-based studies that include direct and indirect consequences, identification of at-risk subpopulations and separate assessments for those subpopulations. Reliable mathematical models of risks to people, including input and parameters from similar models developed for wild cervids and incorporating all sources of risk, are essential to achieving the goals of the Strategy (1,3).
- o Aboriginal people possess knowledge and cultural perspectives essential to evaluating the risk of CWD to their communities. Risk analysis for these communities must be carried out with the affected communities integrated into the research teams (1,3).
- o Methods in risk communication that are effective in reaching all relevant groups and serving the needs of those groups are poorly developed. Research is required to develop effective methods of risk communication with respect to CWD (1,3,6).



GOALS OF CANADA'S NATIONAL CWD CONTROL STRATEGY



4.2 Management programs will be modified as knowledge is generated

- Because management of CWD is based on limited knowledge and experience, for the next 5 to 10 years management programs should include appropriate controls and gather adequate data to assess results in a scientifically competent manner.
- An adaptive management approach will be based on timely evaluations of CWD management activities.
- Advances in wildlife biomedical and social sciences and understanding of the socio-economic impacts of CWD and its control will inform CWD management procedures to reduce the impact of CWD in Canada.

Personnel and processes are needed to evaluate and recommend management options. Evaluations must consider the potential negative impact of CWD, costs of management options, likelihood of success of management methods, and potential negative impacts of the management response itself.

4.3 Regular review of CWD research

- At each opportunity to review the progress of the Strategy, new research findings, including the results of controlled field programs, should be reviewed and their implications for future management approaches discussed and incorporated into the best practices guidelines.

Goal 5: Education and Training

Education and training of wildlife disease specialists and other personnel is required to achieve the goals of the National CWD Control Strategy.

Key Components:

- 5.1 **Develop and maintain technical competencies in the many agencies responsible for CWD programs.**
- 5.2 **Maintain/continue to develop highly qualified personnel for CWD research and management.**
- 5.3 **Engage and train various populations (including aboriginal peoples and communities) to participate in CWD surveillance and control.**



GOALS OF CANADA'S NATIONAL CWD CONTROL STRATEGY



Goal 6: Communication and Consultation

Effective communication and consultation are required to achieve the coordination and collaboration essential to realize all of the goals of the National CWD Control Strategy and to inform relevant parties, including the public, about the environmental, economic social and human health issues related to CWD and associated programs.

Key Components:

6.1 Information sharing

- The sharing of information and data consistent with the requirements of achieving Goals 1 to 5 as set out above with relevant participants in the Strategy.
- The information systems (databases, web sites, email lists, etc.) needed to meet the communication requirements of the Strategy will be identified and appropriate tools and capacities developed including a possible communications coordinator (focal point).

6.2 Stakeholder communications and consultations

- Authorities responsible for aspects of CWD management should each establish communication plans including identification of lead agencies, spokespersons and linkages to other agencies as applicable.
- As policies, regulations and procedures are developed, each participating agency will use its own procedures and networks to best advantage.

6.3 Identification of roles

- Define lead agencies that will carry out CWD communication programs outlined in the Strategy to ensure a coordinated approach to its implementation and operation.

6.4 Risk communication

- Risk communication is the process of communicating responsibly and effectively with stakeholders and the general public about the risk factors associated with an issue (e.g., security of wild and farmed cervids, potential economic impacts, and possible interspecies transmission). Participants in the Strategy will work together to create a shared understanding among stakeholders and the public on the nature of the relevant risk factors and management options.

6.5 Information feedback

- Comments from the public and stakeholders can be received by participants in the Strategy and brought forward to the Strategy's regular reviews² for discussion and consideration.

² Frequency to be determined; consider biannual initially and then every 5 years once the program is functioning well



Appendix A

Edmonton CWD Workshop — Participant List



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Appendix A

Edmonton CWD Workshop — Participant List



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Appendix B Saskatoon CWD Workshop — Participant List



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