PRRS, Swine Dysentery (*Brachyspira*) and the Next Disease: Canada’s Strategy on Control and Elimination

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Does Canada have a strategy on control and elimination of swine diseases? The answer is no with the last swine disease eliminated in Canada being Hog Cholera in 1962 and with no leadership or enough impetus to develop one since then.

Do we need a strategy? Many people in the swine industry believe so and steps are being taken with various initiatives past, current and proposed to build a strategy.

The need has been moved to the forefront with Circovirus Disease emerging in 2005 but now is driven by PRRS which is the most costly endemic disease today in Canada and estimated to cost the Canadian industry $120-$140 million per year (George Morris Centre, 2010) or $5 per pig. Note these costs are not uniform across the country with the Quebec and Ontario industries facing disproportionate challenges compared to W. Canada.

In comparison PRRS in the US is now estimated to be greater than $1 billion (Becton and Morrison, 2012) or $10 per pig.

Swine Dysentery, caused by *Brachyspira* spp is re-emerging in Canada with an increased number of cases identified since 2009 and predominately in Western Canada (Harding et al., 2012). Note this disease has been increasing in the US industry since 2003 and has spread more extensively in the US swine population. The cost of Swine Dysentery is highly variable but estimated to be $7 to $8 per pig (Swine Health Awareness, 2012) and compared to the US we have limited choices in antibiotic control.

With PRRS endemic and expensive and with Swine Dysentery emerging and expensive, but possibly with limited prevalence, there is a clear opportunity for Canada to push forward on a swine disease elimination strategy.
A Canadian vision for PRRSV might look like this:

_The Canadian pig industry will be PRRS free by 2025 accomplished by developing robust disease surveillance, control, containment and elimination strategies and processes that will allow better response to new emerging disease, other endemic disease and foreign animal disease._

The first steps toward accomplishing this vision are already well in progress driven by the many PRRS regional control & elimination projects in the US and now Canada. In 2008 there was one regional project (Steven County, MN) and now there are approximately 20 regional projects in the US and 12 in Canada (6 in ON, 5 in QC, 1 in AB).

I view these initial regional control projects as a series of pilot projects that are driving the development of required tools and from the successes and failures, we are learning the hard lessons on changing an industry culture from “my farm” focus to “my neighbourhood”, “my region” and “my industry” focus.

The following is a compilation summarized from various organizations working on ARC&E’s in North America and they include Canadian Swine Health Board (CSHB), Ontario Swine Health Advisory Board (OSHAB), Centre de Développement du Porc du Québec Inc. (CDPQ), Canadian Association of Swine Veterinarians (CASV), American Association of Swine Veterinarians (AASV), PRRS Coordinated Agricultural Project (PRRS-CAP).

### Regional Control Tools

- Startup package that includes a checklist for regional suitability, a workshop outline and cost calculator.
- Participation agreements to manage the balance required between confidentiality and sharing knowledge.
- Mapping tools with minimum dataset requirements coordinated across Canada.
- Guideline for risk based surveillance and geostatistical mapping.
- PRRS elimination toolkits.
- Virus sequencing database strategy.
- Clinical triggers and testing protocols for determining PRRS breaks including oral fluid technology.
- Guideline for a certifying system for regions.
- Disease surveillance system – Canadian Swine Health Intelligence Network (CSHIN).
It is beyond the scope of this paper to go into detail on these tools but an important note on most of these is they are not specific to PRRS and apply to other diseases including Swine Dysentery, are transferable to other regions and are important building blocks for a national strategy on disease elimination.

What are the hard lessons learned?

I will summarize these from the OSHAB report on challenges encountered and lessons learned from the Niagara regional control and elimination project (Carpenter, 2012).

**Leadership**

Leadership of PRRS regional control projects is an essential component for success.

Leadership is essential in initiating a project, establishing funding and driving regional control and elimination programs. This leadership may come from producers, industry organizations, provincial marketing boards, experienced veterinarians or other sources.

There is great value in the leadership and continuity provided by a project coordinator.

Local leadership is essential to project success. Leaders should include area producers who are engaged by the concepts and value of a Regional Control program. Use key influencers, who the area producers know and trust, e.g. the herd veterinarian, feed supplier, or producer area champions, as the initial contacts to discuss project participation and enrolment.

**Feasibility Studies**

Feasibility studies of a proposed area should include the assessment of physical and production related parameters, area leadership and producer engagement.

Producer engagement and long-term commitment are extremely important requirements for a sustainable project.

Producers will be asked to come forward with goals in mind to initiate area projects and to develop engagement with others in their area to further stimulate grassroots driven projects. This approach is expected to simplify collection of completed confidentiality agreements and first contact information
and more readily develop sustainability due to early producer engagement in the project goals and delivery.

- **Goals**

Initially focusing on communication, transparency and control in PRRS Regional Control programs will allow an area and the industry to learn from a variety of production dynamics, including areas with high pig density. Emphasis should be placed on reducing the risk of PRRS outbreaks. Engaging producers in the development of area specific goals has significant value for both motivation and sustainability.

- **Confidentiality/Participation**

The veterinarian-client relationship is an important factor in engaging and maintaining a producer’s participation and compliance. A producer, whose PRRS elimination project was not successful, initially had concerns regarding the disclosure of a positive PRRS test despite having completed a comprehensive producer participation agreement which addressed confidentiality. Discussions with his herd veterinarian helped alleviate this producer’s concerns and the producer gave his permission for this information to be included in a Change of Status Bulletin which was sent out to the project participants via e-mail and fax.

- **Motivation and Engagement**

Maintaining producer motivation and creating a sense of involvement for all participants can be challenging. One solution is to:

Hold small interactive group meetings with members of the PRRS working group with only the participating producers in the neighbourhood attending. This will facilitate open discussion among the participants.

Pathogenesis, virulence, PCR tests, ELISA tests, RFLP, strain sequence etc. are all part of the day to day language spoken within the veterinary profession. One of the most important lessons learned from the Niagara project is that we as a profession, overestimate the industry understanding of PRRS and terminology.

We must look for areas that we can provide education and understanding without overwhelming producers with science and jargon. Biosecurity is one area and the CSHB national biosecurity program is a very good example of how to achieve this goal. Simply and clearly defining site PRRS status and engaging producers in problem solving issues such as transport and pig flow are other good examples.
Motivating producers, who haven’t experienced PRRS or a severe PRRS strain, can be done by:

Using economic data to outline the cost of PRRSV (“data talks”), including the cost (production and expense) of having field or vaccine strain PRRSV.

Use a trusted personal contact to discuss with the producer the importance of participating in the Regional Control project. The veterinarian-client relationship, the influence of area champions and relationships with service industry personnel are important aspects to engage a producer’s participation and compliance.

- Communication

Regular communication with the project producers and veterinarians is essential. It is important to demonstrate that the project is making a difference and to manage the expectations of all project participants.

This can be accomplished by:

Collecting contact information for all area participants at the initiation of the project (fax/email/phone) and establishing communication pathways so that producers become used to information sharing such as status change bulletins, information updates and sampling tips.

Hold neighborhood (cluster) meetings with focused outcomes intended to address the specific area risks and work with producers to develop solutions.

Open industry, producer and service provider meetings.

Project working group meetings, which include herd veterinarians, to discuss technical issues, area risks and next steps.

Using designated veterinarian farm visits for specific tasks (sampling, biosecurity assessments etc.) as an information sharing opportunity helps deal with budget restraints and provides greater value to area producers.

Communications, that include stories of successful farm elimination programs, which highlight the process and value to the producers involved, is a strong motivator. In the Niagara project, having two large production systems initiate PRRS elimination programs has been invaluable. A team approach was initiated to develop the elimination plans, which were openly discussed at the area meetings.
It is very important to address producer and industry concerns as soon as possible and “face to face”. This fact was illustrated during one of the Niagara elimination programs when a barn, located in another county, was contracted to house and farrow three weeks worth of gestating sows in order to facilitate a farrowing break at the home sow farm. Producers in the county where the sows were to be moved had significant concerns about the PRRS risk to their area. To resolve this issue, a town hall meeting was held to listen to the producers’ concerns and to ensure that the correct information was conveyed. At the end of the meeting, there was a much calmer attitude and a better understanding by area producers of the low risk to their herds. This specific situation resulted in educational opportunities for the producers involved and other industry stakeholders.

Transparency about status changes can be uncomfortable at first for producers especially when the change is from a PRRS negative to a PRRS positive status. At the time of a PRRS break, industry communications may not be “at the top of the list” and therefore, establishment of agreed upon communication pathways that area producers and vets will follow in the case of any status change, is critical.

- **Sampling and Diagnostic Testing - On-Going Monitoring**

In order to improve long-term sustainability of the project it is essential to identify and foster methods that can be used for on-going monitoring of the area that are inexpensive and simple to use and will target the high-risk-high-consequence sites.

- **Data Management**

A robust database using standardized definitions of the variables is essential. To this end an integrated PRRS Regional control spatial database system is currently being developed. This will allow timely surveillance of different genotypes of PRRSV and their clinical impact in different age groups. It will also use all geographical, demographical, diagnostic, network and important biosecurity information for producers of every regional PRRS project.

In conclusion, delivering a national disease control & elimination strategy is essential and will require strong and unified leadership to develop the vision, detail the strategy and build the tools from ongoing lessons learned.
References


George Morris Centre, Guelph, Ontario. A Risk, Benefit, Strength, Weakness, Opportunity and Threat Analysis for the Control and Possible Eradication of Porcine Reproductive and Respiratory Syndrome (PRRS) Virus Within the Canadian Swine Herd (2010).
