

Future Directions and Priorities for Canada's Immunization Programs

Presentation to the
NATIONAL VACCINE ADVISORY COMMITTEE

Washington, DC, September 9, 2014

Dr. John Spika, Director General
Centre for Immunization and Respiratory Infectious Diseases
PUBLIC HEALTH AGENCY OF CANADA



PROTECTING CANADIANS FROM ILLNESS



Public Health
Agency of Canada

Agence de la santé
publique du Canada

Canada

Purpose of Presentation

- **Remind of key similarities and differences** between U.S. and Canadian approaches to immunization programming
- **Review Canada's plans and directions** for the future of immunization policies, programs and initiatives
- **Highlight Canada's current strategy to identify and pursue vaccine innovation priorities** that address evolving public health and other needs
- **Reflect on recent Canada/U.S. collaborations** on vaccine innovation initiatives

Some Key Comparisons

Element	United States	Canada
Immunization program policy advice	NVAC	F/P/T Public Health Network
Vaccine procurement	<ul style="list-style-type: none"> Federal gov't (VFC) Private insurance 	14 F/P/T public programs
Technical guidance	ACIP—integrated technical and programmatic	NACI (federal)—technical
Programmatic guidance	ACIP—integrated technical and programmatic	CIC (F/P/T)—programmatic
Coordinated schedules	Yes	No

National Immunization Strategy

- **Established in 2003** to facilitate federal/provincial/territorial (F/P/T) collaboration on immunization issues and initiatives
- **Operating under an F/P/T *Public Health Network*** that seeks consensus and cooperation on approaches and initiatives of mutual benefit
- **Comprehensive 2013 review** established new strategic directions
- **Now exploring, fleshing out and firming up** detailed proposals for implementation

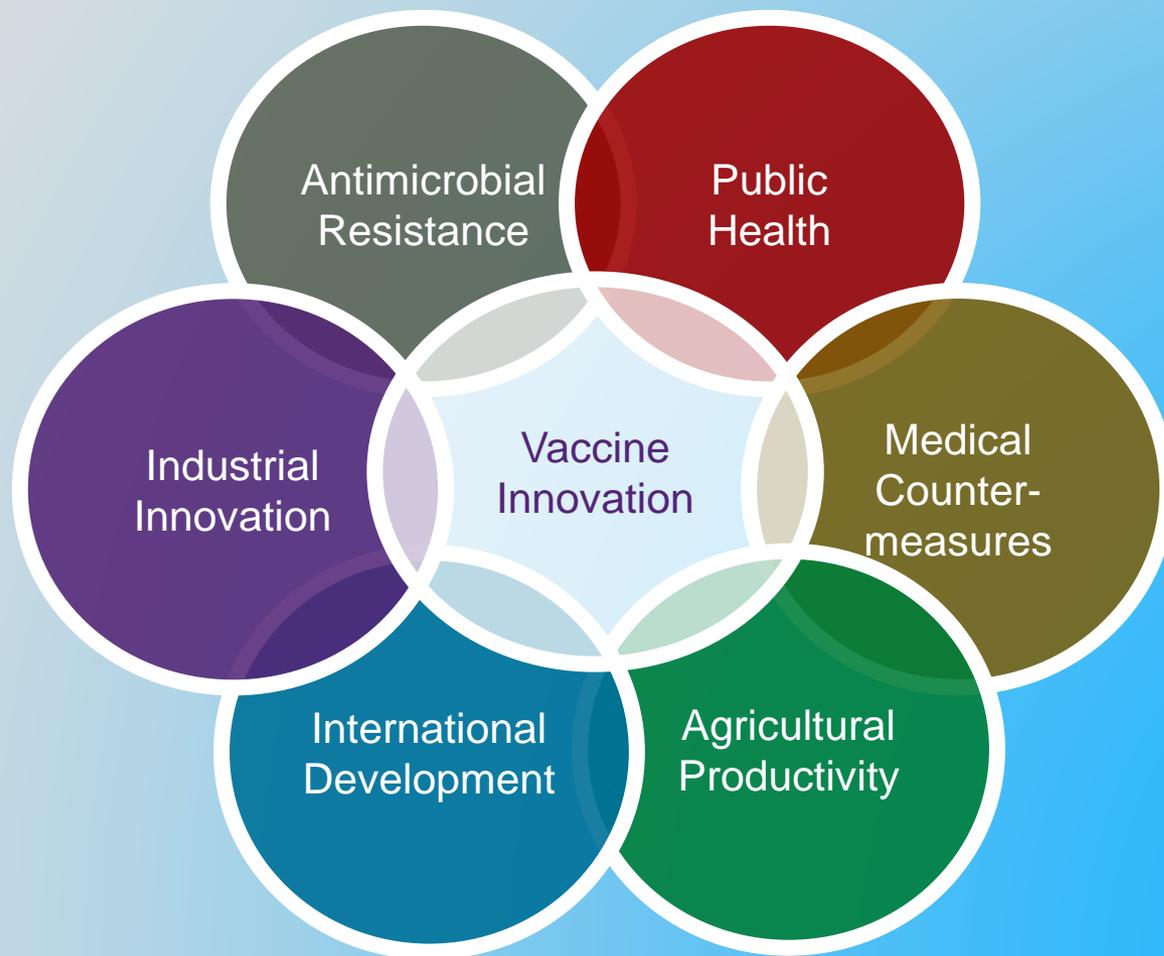
Key New Directions and Priorities

Element	Enhancements and Innovations
Guidance	Integrated technical and programmatic guidance with collaborative F/P/T input and accountability
Schedules	Moving to promote and support coordinated vaccine schedules and immunization programs, while respecting jurisdictional autonomy
Surveillance	"Blueprint" for federated national surveillance system
Response	F/P/T coordinated all-risk outbreak/adverse event response <i>Protocol</i>
Evaluation Research	Federally-initiated <i>Canadian Immunization Research Network</i>
Security of Supply	F/P/T prevention and response <i>Protocol</i> , and new measures to mitigate risks and impacts
Vaccine Acceptance and Uptake	Collaborative F/P/T strategy to understand and address determinants of hesitancy, acceptance and uptake, building on international best practices and knowledge sharing
Vaccine Development	Federal-led national research, innovation and development <i>Action Plan</i> , with P/T input on public health priorities

Vaccine Research, Innovation and Development

- **Federal-led national Action Plan** providing cohesive approach to vaccine research, innovation and development of priority national interest
 - » Canada constitutes 1.6% of global market
 - » some provinces are early adopters of new vaccines
- **Key features of approach**
 - 1) Integrated Objectives
 - 2) Whole-of-Government Approach
 - 3) Strategic Partnerships and Collaboration
 - 4) Active Engagement
 - 5) Objective Priority Setting
 - 6) Vaccine Priorities
 - 7) International Collaboration

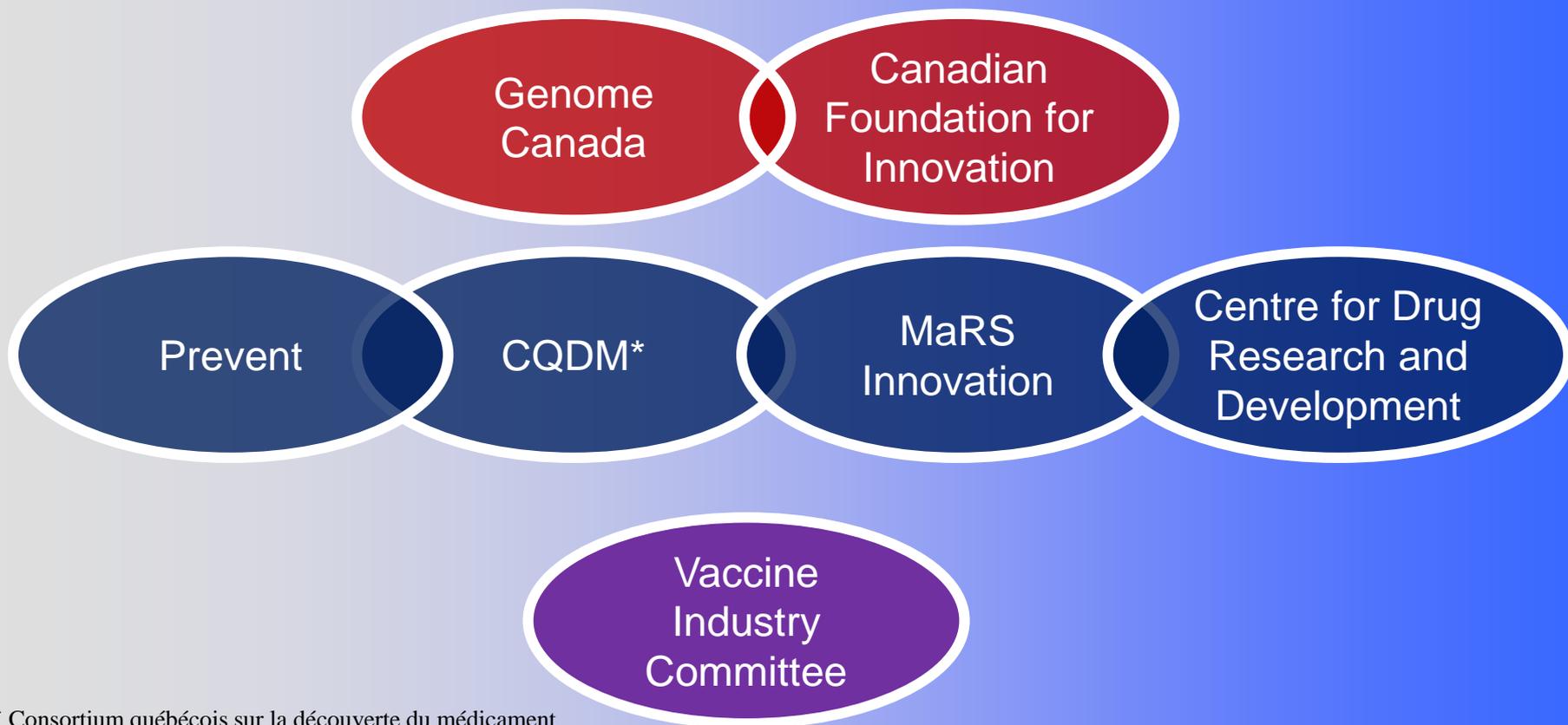
1) Integrated Objectives



2) Whole-of-Government Approach

Human Health	<ul style="list-style-type: none">• Health Canada• Public Health Agency of Canada• Canadian Institutes of Health
Animal Health	<ul style="list-style-type: none">• Agriculture and Agri-Food Canada• Canadian Food Inspection Agency
International Development	<ul style="list-style-type: none">• International Development Research Centre• Foreign Affairs and Trade Development Canada
Medical Countermeasures	<ul style="list-style-type: none">• Department of National Defence• Defence Research Development Canada
Industry, Science and Technology	<ul style="list-style-type: none">• National Research Council• Industry Canada• Natural Sciences and Engineering Research Council

3) Strategic Partnerships and Collaboration



* Consortium québécois sur la découverte du médicament

4) Active Engagement

- **High-level kick-off** by federal Assistant Deputy Minister-level steering committee and November 2012 multi-stakeholder workshop to frame issues
- **Ongoing research and analysis** by federal Directors General committee
- **Multi-stakeholder workshops and webinars** with industry and scientific/research community
 - » overall vaccine priorities—human and animal
 - » enabling technologies—adjuvants, biomarkers for efficacy and safety
- **Engagement of key national bodies**
 - » Vaccine Industry Committee
 - » Council of Chief Medical Officers of Health (F/P/T)
 - » National Farmed Animal Health and Welfare Council
 - » Chief Veterinary Officers (F/P/T)
 - » Pan-Canadian Public Health Network (F/P/T)

5) Objective Priority Setting

- **Health issue** of national magnitude or significance—burden of disease, vulnerable populations, health security implications, link to AMR
- **Economic/industrial issue** of national magnitude or significance—threats to labour force and agricultural sector; opportunities for leveraged investments and commercialization
- **Cross-border dimensions and implications**—interprovincial, international
- **Unique/specialized requirements**—dependent on federal/national facilities, expertise and collaboration required
- **Industry interest and receptor capacity**—alignment with domestic research interests, development capacities and state of readiness along the pipeline

6) Vaccine Priorities

- **Canada using various tools and approaches** to identify and assess vaccine priorities of national interest in Canada
- **Pilot testing/refinement of “SMART” vaccines**
 - » objective analysis and comparison of vaccines with respect to their expected “performance” against a set of variables of interest, including client-specific weighting of criteria
 - population (age, gender, socio-economic status, race, other variables)
 - burden of disease
 - vaccine efficacy
 - vaccine purchase and immunization program implementation costs
 - other considerations and outcomes

6) Vaccine Priorities (cont'd)

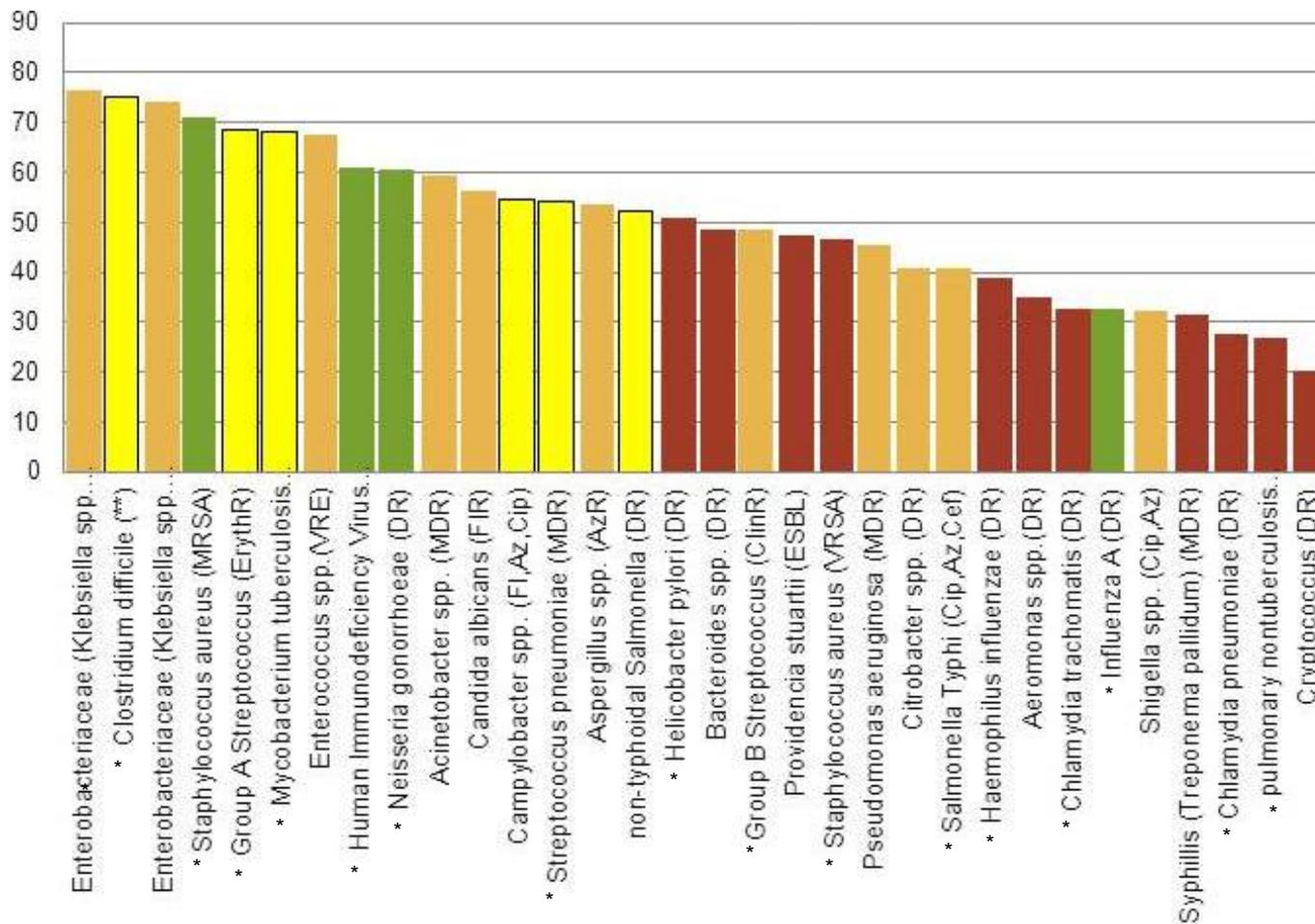
- **International Prioritization of AMR Activities**
 - **Centre for Disease Control** – 2013 Report on AMR threats in the US
 - assessed select pathogens based on seven criteria; work was initiated as a result of *Generating Antibiotics Incentives Now (GAIN) Act*
 - report aimed at lay public and policy makers
 - focused on pathogens where research/surveillance already being conducted in US
 - **World Health Organization** – 2014 Global report on AMR surveillance
 - selected bacterial drug combinations
 - choice for 'bug-drug' combinations likely based on committee decision
 - April 2014 WHO working group initiated to define priority AMR pathogens

6) Vaccine Priorities (cont'd)

- **Canadian AMR risk ranking and prioritization**
 - » systematic analysis of pathogens/diseases associated with AMR, to assess potential contribution of vaccines in reducing AMR vulnerabilities
 - initial assessment of 32 diseases currently/potentially present in Canada
 - » primary ranking against *health burden and residual risk*—incidence, mortality, case fatality, communicability, treatability and clinical impact
 - » secondary prioritization against *additional contextual considerations*—10-year projection of incidence, economic impact, public and political attention, and preventability

6) Vaccine Priorities (cont'd)

Initial AMR ranking of 32 pathogens - Canada



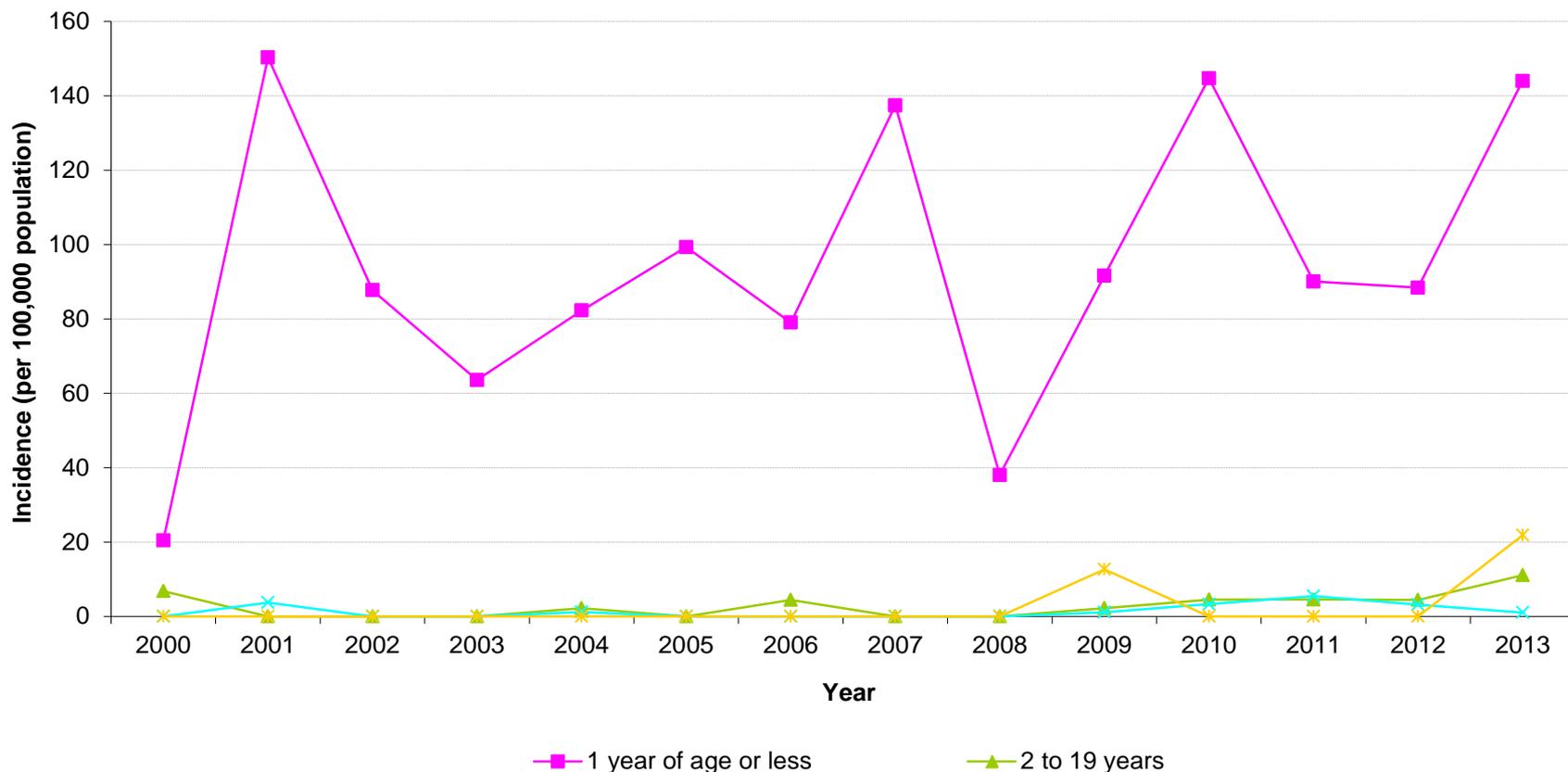
7) International Collaboration

- **Recent examples of international collaboration and cooperation on vaccine innovations**
 - » Innovative Medicines Initiative (European)
 - » *Haemophilus influenzae* type a
 - » Ebola medical countermeasures

Innovative Medicines Initiative (IMI)

- **Joint undertaking** between European Union and the pharmaceutical industry association EFPIA
- **Largest public-private initiative** aimed at speeding up development of better and safer medicines
- **Supports collaborative research projects** and builds networks of industrial and academic experts
- **Works in precompetitive space** to address important public health issues, including safety and efficacy of vaccines and drugs through programs like BIOSAFE

Incidence of Hia in Northern Populations by age group, (N=106)



Collaboration on *Haemophilus influenzae* (Hia)

- **Collaborative approach** involving Canada, US, PAHO, Brazil and Columbia
- **International Circumpolar Surveillance**
- **Genome sequencing of 40 Hia strains**—38 from Canada and 2 from Brazil:
 - » allow bacteria characterization
 - » advance Hi diagnostics using monoclonal antibodies
- **Public Health Agency of Canada (PHAC)** providing expertise to PAHO in typing Hia strains
- **CDC proposal to 20 states** for enhanced lab-based surveillance on non-b Hi
- **Arctic Investigations Program (CDC)** to start severity study
- **Protein polysaccharide conjugate vaccine (NRC)**

VSV-based Ebola Vaccine MCM

- **Developed by Public Health Agency of Canada**, with co-funding from Department of National Defence's *Canadian Safety and Security Program*
- **Licensed to Newlink Genetics Corporation**
- **Testing in non-human primates (Nature, August 29):**
 - » very good protection pre-exposure
 - » less protection early post-exposure
- **Administered to German researcher** following high-risk needlestick lab exposure
 - » not otherwise tested in humans
 - » not approved for use in humans by Health Canada, FDA or other international regulators
- **Phase I Clinical Trials** fall 2014
- **Collaboration** DOD, NIAID, BARDA

Conclusions

- **Collaborative approach** vital, engaging all key partners and parties
- Need to give industry a **sense of market potential**
- Vaccines of **public health interest and MCM** have some overlap, but also distinctions
- Further **cross-border collaborative opportunities** to be explored