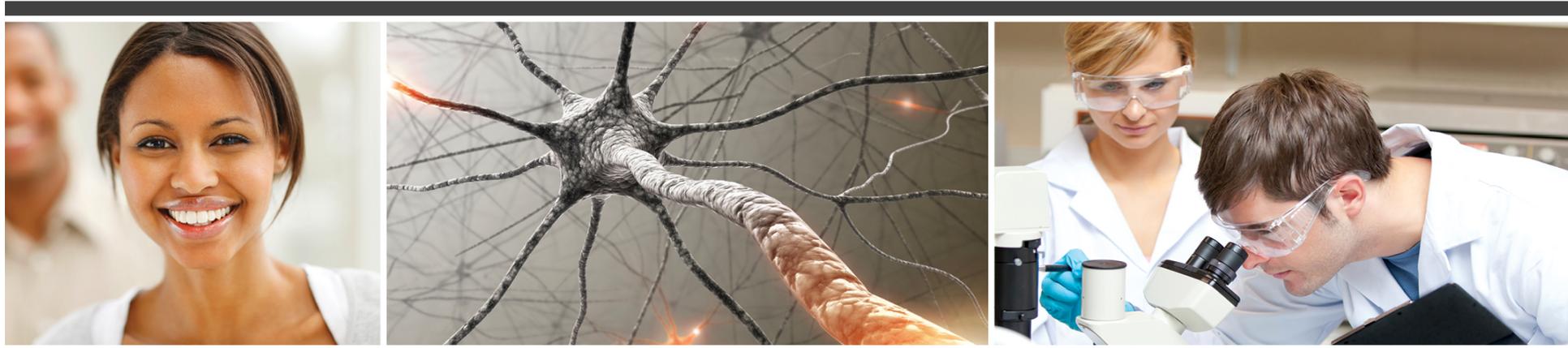


Use of *SMART Vaccines* for Vaccine Priority Setting and Decision Making in Canada

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PROTECTING CANADIANS FROM ILLNESS



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Purpose of Presentation

- **Review the evaluation of *SMART Vaccines* ver. 1.0**
- **Describe recent activities** for assessing and setting vaccine priorities in Canada
- **Explore potential ways to integrate** use of *SMART Vaccines* in vaccine priority assessment and decision making in Canada
- **Discuss next steps** in consideration and use of *SMART Vaccines*

Context—Action Plan on Vaccine Innovation

- **Federal government-led national initiative begun in 2012** to promote, coordinate and facilitate well-focused national efforts for research, innovation and development of vaccines and related technologies to address evolving priority needs, interests and opportunities
- **Coordinated by federal interdepartmental committees** at the Director General and Assistant Deputy Minister level
- **Linked with broad domestic and international strategies, priorities and commitments** in public health, AMR, maternal and child health, science and technology, industry, security and agriculture
- **Strong focus on priority vaccines and technologies**

Canadian Interest in *SMART Vaccines* Tool

- **Initial consideration of potential approaches to vaccine innovation and development** at November 2012 multi-stakeholder consultation session
- ***SMART Vaccines*** has a potential role in achieving consensus on vaccines of public health priority for Canada: short, medium and long term
- **PHAC and federal partners reviewed of 2013 and 2014 releases of *SMART Vaccines* tool and guide**
- **Internal discussions around data requirements** and availability of Canadian data, to assess feasibility and benefits of the tool for some selected diseases and applications of: TB, *Chlamydia trachomatis*, all of Canada versus Northern populations

Testing of Version 1.0 (2014)

- **Improvements over 2013**, including ability to enter and use Canadian data
- **Three “hypothetical test case” diseases** with corresponding assumptions about vaccine characteristics
- **Compared rating/ranking results** by moving attributable weights
 - » premature deaths averted
 - » incidence cases prevented
 - » net direct cost savings per year
 - » work force productivity gains
 - » cost-effectiveness
 - » benefits to infants and children
 - » benefits to women
 - » possible elimination of disease
- **Use available Canadian data for TB and *Chlamydia trachomatis***

Observations from Version 1.0 Evaluation

- ***SMART Vaccines* allows for ready assessment** of the relative impact on overall rating and ranking of vaccines based upon
 - » different assumptions about key factors (e.g., incidence and burden of disease; cost of immunization; vaccine efficacy; etc.)
 - » relative weighing of attributes and outputs, reflecting user values and policy criteria (e.g., address health inequities; target special populations; etc.)
- **Use of *SMART Vaccines* introduces a consistency, transparency and discipline** in the design of meaningful scenarios and tracking and comparing their implications
- **It is particularly useful in:**
 - » forcing active consideration of critical factors and assumptions
 - » demonstrating the sensitivity of different facts and/or assumptions in affecting rating/ranking scores—i.e., whether significant or trivial

Observations from Evaluation (cont'd)

- **Care needed in selecting attributes for diseases with long latency (eg. TB)** – “incidence” data in *SMART Vaccines* are based on *presentation of illnesses* not the incidence of *new infections* – for TB this would point to a priority focus on the *elderly*
- **The software needs to provide sufficient options to make entries and adjustments for age and gender-specific morbidity rates and disease costs** - for *C. trachomatis* these factors can be significant
- **There is a need for a ready ability to link the disease with the population groups** in which it spreads, eg. *age profiles* of regional populations of concern – TB is largely a Northern population issue, where the age profile is radically different from the national average
- **Users have to be disciplined** in selecting only a few weighting factors

Conclusions: Canadian Interest in *SMART Vaccines*

- **We remain very interested in the potential use of *SMART Vaccines* as a tool to guide discussions and deliberations on vaccine priorities of public health importance**
- **We look forward to the prospects of live demonstrations with active participation and inputs from representative audiences**
- **We look forward to work with version 1.1, and will share our perspectives and suggestions for its continued refinement**
- **In the meantime, we are readying more Canadian data and some useful scenarios for more in-depth testing**

Rating of Candidate Priority Vaccines

- **Screening and consultation process identified some 30 candidate human vaccines of national interest** with good prospects of development
 - » Short Term \leq 6 years
 - » Medium Term 7–15 years
 - » Long Term 13+ years
- **Provincial/territorial Chief Medical Officers of Health then rated candidate vaccines on a scale of 1–10** (not urgent/significant to highly urgent/significant)
- **A parallel exercise with Chief Veterinary Officers** focused on a dozen candidate animal vaccine priorities
- **Results will be used to shape priorities and focus federal attention** in the Action Plan

Next Steps

- **Apply the *SMART Vaccines* tool to assess higher-ranked vaccines in Canada** identified through the consultation process
- **Focus on ways to highlight cost effectiveness**, which will be a key attribute in Canada
- **Emphasize health equity** as a variable of particular interest to Canada
 - » diverse regions
 - » vulnerable populations
- **Continue to share ideas and insights** in refining the tool, mastering its applications, and communicating results responsibly and effectively

Focus and Scope of Action Plan

- **New and/or improved vaccines**
 - » address persistent and/or emerging vaccine-preventable human and animal diseases of concern
 - » offer effective alternatives to existing vaccines
 - » improve timeliness of production, especially in times of major outbreaks or pandemics
 - » provide less invasive and more convenient and publicly acceptable options for vaccine administration,
 - » minimize the numbers of vaccines and doses required
- **Innovative enabling technologies** vital to vaccine effectiveness and safety
- **Increased domestic manufacture** to expand Canadian business opportunities and strengthen security of vaccine supply
- **More focused, coordinated and accessible federal support** for the above

Whole-of-Government Approach

Human Health

- Health Canada
- Public Health Agency of Canada
- Canadian Institutes of Health Research

Animal Health

- Agriculture and Agri-Food Canada
- Canadian Food Inspection Agency

International Development

- International Development Research Centre
- Foreign Affairs and Trade Development Canada

Medical Countermeasures

- Department of National Defence
- Defence Research Development Canada

Industry, Science and Technology

- National Research Council
- Industry Canada
- Natural Sciences and Engineering Research Council

Identification of Candidate Priority Vaccines

- **Preliminary review and screening of candidate *human* pathogens and vaccines of national interest**, including consultations with industry and research community, and consideration of key criteria
 - » incidence
 - » mortality
 - » case fatality
 - » *communicability*
 - » treatability
 - » clinical impact
 - » public and political profile
 - » 10-year projection of incidence
 - » economic impact
 - » preventability (i.e., dependence on vaccines for health protection)
- **A parallel exercise was undertaken for *animal* pathogens/vaccines**, using animal/agriculture-relevant criteria