

# Public health implementation of HPV vaccination

Bernard Duval, md, mph, frcpc

Institut National de Santé Publique du Québec

Montréal, 2006-11-08



recherche

*Institut national  
de santé publique*

Québec 

# Outline

1. The decision-making process in Canada for public health vaccine programs
2. Decision-making models for HPV vaccines
3. Implementation strategies - options
4. Thorny issues



recherche

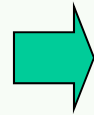
*Institut national  
de santé publique*

Québec 

# From approval of a vaccine to its inclusion in a public health program

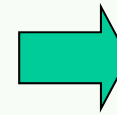
## **Approval**

- BGTD once submitted by manufacturer



## **Recommendations**

- NACI
- CIC
- Provincial committees



## **Decision**

- Taken by provincial authorities



recherche

Institut national  
de santé publique

Québec 

# Approval of a vaccine

- The Biologics and Genetic Therapies Directorate (BGTD) verifies if the product meets standards of safety and efficacy
- Made up of federal officials from Health Canada
- Approves the monograph as submitted by the manufacturer
- Does not make recommendations on product use



recherche

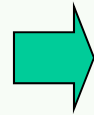
Institut national  
de santé publique

Québec 

# From approval of a vaccine to its inclusion in a public health program

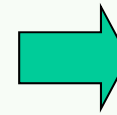
## **Approval**

- BGTD once submitted by manufacturer



## **Recommendations**

- NACI
- CIC
- Provincial committees



## **Decision**

- Taken by provincial authorities



recherche

Institut national  
de santé publique

Québec

# Recommendations on vaccine use – federal level

- The National Advisory Committee on Immunization (NACI)
  - Made up of experts (pediatricians, infectiologists, public health representatives...)
  - Issues general recommendations based only on the burden of disease and the vaccine's characteristics, excluding other considerations (economic analysis...)
- The Canadian Immunization Committee (CIC)
  - Made up of provincial and territorial representatives
  - Issues general recommendations on strategies for implementation



recherche

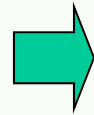
Institut national  
de santé publique

Québec 

# From approval of a vaccine to its inclusion in a public health program

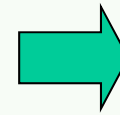
## **Approval**

- BGTD once submitted by manufacturer



## **Recommendations**

- NACI
- CIC
- Provincial committees



## **Decision**

- Taken by provincial authorities



recherche

Institut national  
de santé publique

Québec

# The decision to include a vaccine in provincial programs

- Financial implications are very important for provincial governments – the cost of a vaccine and of its administration, both initial and recurring costs
- Vaccines compete with all other new health programs (curative interventions ...) and with other sectors
- The decision concerning a vaccine follows the usual rules for political decisions: a mix of science and opportunity



recherche

Institut national  
de santé publique


Québec 

# Decision making models for public health immunization programs



recherche

*Institut national  
de santé publique*

Québec 

# The decision-making model for vaccination used in Canada

- Canada uses a decision-making model developed specifically for vaccines: the Erikson- De Wals model
- It is made up of 13 categories, in the form of questions, including 58 criteria



recherche

Institut national  
de santé publique

Québec 



Available online at [www.sciencedirect.com](http://www.sciencedirect.com)

SCIENCE @ DIRECT®

Vaccine 23 (2005) 2470–2476

Vaccine

[www.elsevier.com/locate/vaccine](http://www.elsevier.com/locate/vaccine)

## An analytical framework for immunization programs in Canada

L.J. Erickson<sup>a,b,\*</sup>, P. De Wals<sup>c,d</sup>, L. Farand<sup>a</sup>

<sup>a</sup> *Département d'administration de la santé, Université de Montréal, Montréal, Canada*

<sup>b</sup> *Agence d'évaluation des technologies et des modes d'intervention en santé du Québec (AETMIS),  
2021 Avenue Union, Bureau 1040, Montreal, Que., Canada H3A 2S9*

<sup>c</sup> *Département de médecine sociale et préventive, Université Laval, Canada*

<sup>d</sup> *Institut national de santé publique du Québec, Canada*

Received 29 July 2004; received in revised form 12 September 2004; accepted 24 October 2004

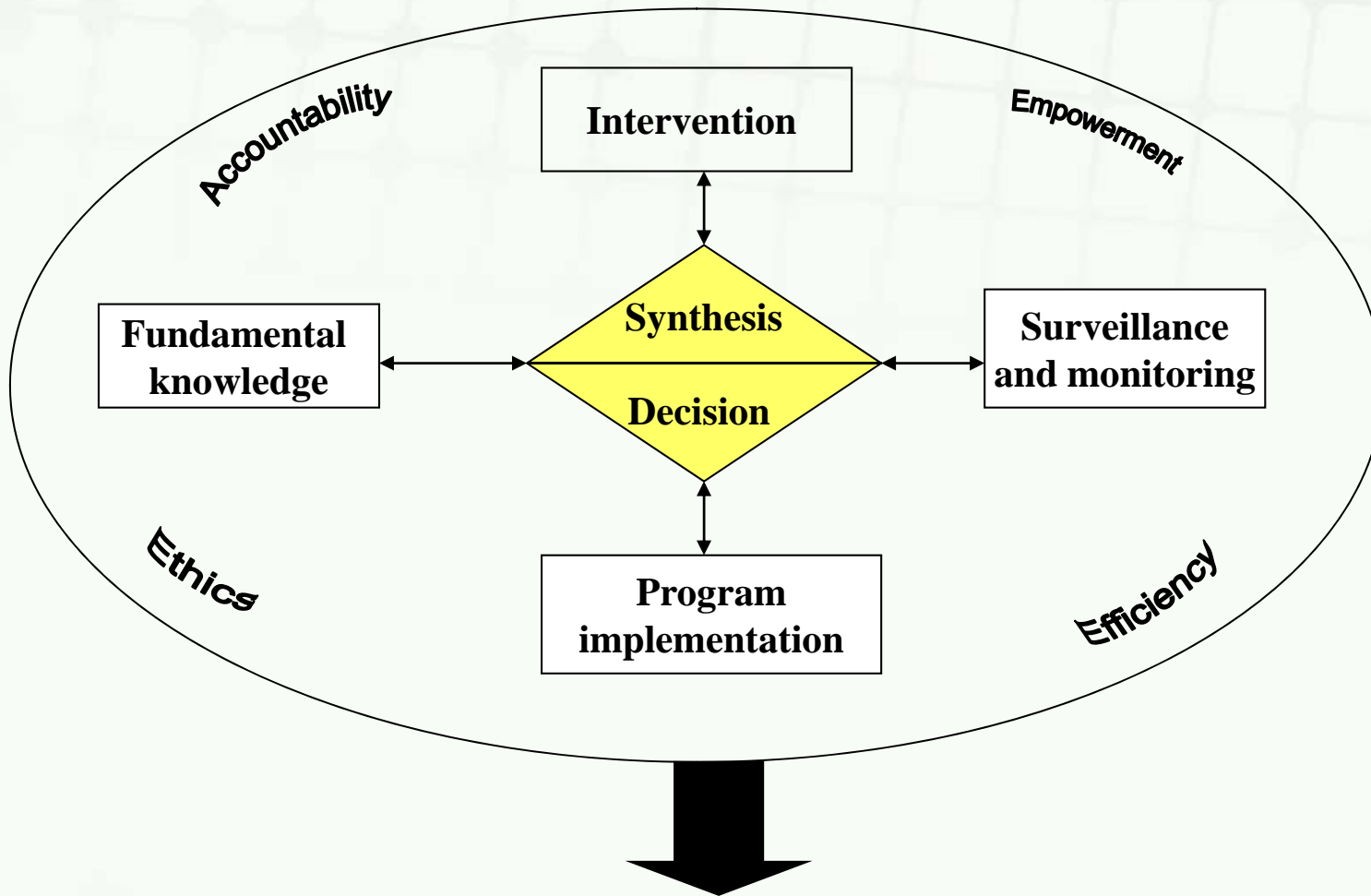
Available online 24 November 2004



recherche

Institut national  
de santé publique

Québec 



## Reducing the burden of avoidable cancers through vaccination

(Adapted from NCIC, 1994)

# Combined cancer/vaccine model

## The burden of the disease

- Deaths, etc.
- Screening, etc.
- Costs

## The vaccine

- Efficacy
- Safety

## Implementation

- Cost-effectiveness
- Strategy
- Acceptability
- Feasibility
- Ethics
- Legal aspects
- Compliance
- Political aspects


## Monitoring

- Evaluation
- Impacts
- Surveillance



recherche

Institut national  
de santé publique

Québec 

# Implementation strategies for HPV vaccines



recherche

*Institut national  
de santé publique*

Québec 

# Who pays for vaccines in Canada

- Public funding (90%)
  - Paid by provincial authorities, usually not federal
  - Universal programs
    - 1 cohort only
    - Catch-up
  - Targeted programs
- Privately paid (10%)
  - Paid by individual, employers...
  - Recommended but not paid by the MOH – (varicella), vaccines for travelers

# HPV vaccine in Canada

- Gardasil was approved in July 2006
- It is approved only for young women from 9 to 26 years of age
- Three doses are required: 0, 2, 6 months
- Recommendations of Canadian scientific committees are still under preparation
- It costs \$145 per dose (\$435 in total)
- Cervarix not yet approved

# Principal strategies for vaccination in the context of a public program

- Selective vaccination:
  - For certain groups that run an increased risk of diseases
- Universal vaccination with limitations:
  - For one or several age cohorts only (no catch-up)
- Universal vaccination:
  - the vaccine is offered free-of-charge to all

# Vaccination of groups at risk

- **For**
  - Reduced cost
- **Against**
  - Reduced effectiveness
  - Difficulty of identifying and reaching these groups
  - Inequity
  - An approach whose effectiveness has not been demonstrated



## Vaccination of 1 cohort of preadolescents

- **For**

- Moderate cost
- Efficacy for this cohort
- Relatively simple administration, including registration, if combined with the Hepatitis B school vaccination

- **Against**

- Modest and belated impact on the disease
- Possible reticence among parents
- Inequity for other young girls
- Cost



recherche

Institut national  
de santé publique

Québec 

# Vaccination of several cohorts

## • For

- More significant and rapid effect on incidence of the disease
- Can be associated in part with the dTap at 15 years of age, given at school

## • Against

- Partial impact on the disease
- Possible reticence of parents
- Inequity for other young girls
- High cost
- Difficulty of vaccinating so many individuals



# Vaccination for all 9-26 year olds

- **For**

- Maximal impact on the disease
- Completely equitable


- **Against**

- Very high cost
- Difficulty of organizing a mass vaccination
- Reduced efficacy among the older subjects



recherche

Institut national  
de santé publique

Québec 

# 5 key issues



recherche

*Institut national  
de santé publique*

Québec 


# Feasability - providing vaccines to adults

- The administration of vaccines is a complex (and costly) act
- Few vaccines are given to adults outside of travel clinics and influenza season.
- Infant vaccination is well organized but there is not really a system for vaccinating adults
- Vaccines cannot be prescribed and delivered like a drug



recherche

Institut national  
de santé publique

Québec 


# Immunizing adults - solution

- Develop a new immunization system for adults (contracts with providers, cold chain...) in each province, with rules and services to be defined
- Monitoring systems will have to be developed (vaccine registries,...)



recherche

Institut national  
de santé publique

Québec 

# The cost of the vaccine - 1

- New paradigm:
  - Vaccines used to be cheap and save money
  - Now they are expensive, no longer cost-saving
- Decisions to be made:
  - By the provinces
  - By the individuals (and the providers)
- Vaccines that are recommended should be proposed by the doctor to his/her patient, whether they are free-of-charge or not



recherche

Institut national  
de santé publique

Québec 

# The cost of the vaccine - 2

- For Quebec (pop. 7M)
  - Actual annual cost for vaccines: \$45M
  - HPV: 1 cohort \$20M, catch-up \$350M
- Other new vaccines: hepatitis A, rotavirus, zona, quadrivalent meningo, MMRV, hexavalent



recherche

Institut national  
de santé publique

Québec 

# Cost - looking for solutions

- Less costly schedules (2 doses)
- Innovations
  - Decreasing cost of administration
  - Cost sharing: province-individual
  - Health insurance?
- Decreasing expenses in other programs
  - Cervical cancer screening



recherche

Institut national  
de santé publique

Québec 

# Impact on the screening program

- Vaccination impact on screening cannot be avoided
  - Will affect test performance (predictive value..)
  - Influence the selection of new tests
  - New algorithm for immunized women to be developed
  - Change in women's attitudes and behavior
  - Looking for cost reduction of screening programs to compensate in part for the cost of vaccination



recherche

Institut national  
de santé publique

Québec 

# Screening program – new directions

- Design new screening programs
  - Taking immunization status into account
  - Using new testing technology in a cost-effective way
  - With information system providing immunization status to the clinician
  - Being used to evaluate the immunization program
- Implementation of these renewed screening programs in synergy with vaccine program
  - New guidelines, training, etc...



recherche

Institut national  
de santé publique

Québec 

# Evaluation of HPV vaccination programs

- It is crucial to evaluate the positive and negative impacts of vaccination programs
- Evaluation of the efficacy of HPV vaccination cannot be done by the usual means: the incidence of HPV infections cannot be measured by notifiable diseases or by hospitalization data
- New tools will be required to measure vaccine efficacy, the evolution of the epidemiology of infections and of HPV genotypes, the impact on screening tests...



recherche

Institut national  
de santé publique

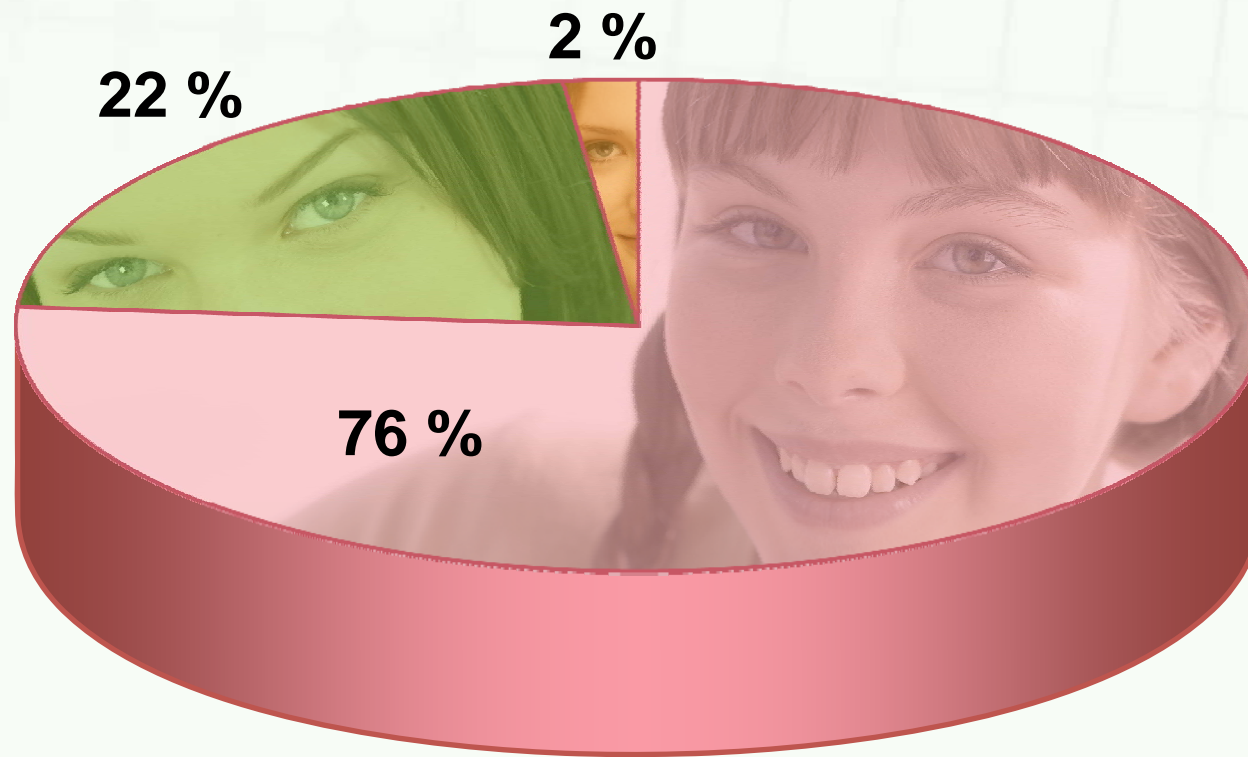
Québec 




# Evaluation – innovative strategies

- Baseline measurements
  - Population based genotype specific prevalence data
  - Seroprevalence data...
  - Knowledge, attitudes and behaviour
- Monitoring tools
  - Set up evaluation and demonstration zones:
    - surveillance of vaccination using HPV testing done in screening programs,
    - pilot projects of new algorithm, incomplete schedules, innovative delivery and information systems, training and information tools, etc...

# Acceptability of the vaccine

- Health professionals
  - Gynaecologists and gynaeco-oncologists
  - Paediatricians
  - General practitioners
  - Nurses
- Public in general
- Young women
- Preteens and their mother



 < 14 ans     14 - 17 ans     > 18 ans

## Acceptability of HPV vaccination in adults ( $\geq 18$ years)

<b>Variables (N = 500)</b>	<b>Totale- ment en accord</b>	<b>Plutôt en accord</b>	<b>En accord: total</b>
The HPV vaccine should be given before sexual debut:	40%	31%	<b>71%</b>
Teens will have sexual debut at a younger age:	13%	19%	<b>32%</b>
Would recommend to daughter, niece:	48%	36%	<b>84%</b>
Men should receive the vaccine:	57%	31%	<b>88%</b>

# Acceptability of HPV vaccine by women < 25 ans

<b>Variables</b> (43 women < 25 years)	<b>Totale- ment en accord</b>	<b>Plutôt en accord</b>	<b>En accord: total</b>
Would agree to be immunized:	56%	35%	<b>91%</b>
If it costs 100\$ a dose:	28%	44%	<b>72%</b>
If doctor recommends it:	79%	16%	<b>95%</b>

# Conclusion

- The first vaccine serving primarily to prevent cancer: great opportunity to save lives
- Recommendations are not yet made in Canada
- One vaccine is already on the private market
- Many hurdles, need for innovative solutions, for implementation research
- Need for monitoring infrastructure
- Will require unprecedented collaboration among
  - Experts in the fields of vaccination and cancer screening
  - Clinicians and specialists in public health