Consortium for Infectious Disease Control

A neutral, third party platform supporting infectious disease projects,
providing continuing medical education, coordinating initiatives, and undertaking research

Winnipeg, Manitoba, Canada
November 12, 2019

Accelerating Cervical Cancer Elimination:
What you can do!

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Chair of the Canadian Network on HPV Prevention
Family Physician, Family Medicine Group La Cité du Parc Lafontaine
Board Member, International Papillomavirus Society

Moderator: George Wurtak BSc, Bed, MED
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Webinar Objectives

- Discuss the WHO goal of the global elimination of cervical cancer by 2030
- Address cervical cancer elimination from a prevention perspective
- Describe current cervical cancer burden, challenges, and the projected increase in cervical cancer if changes are not implemented
- Discuss the recently produced document entitled "Canada's Role in Accelerating Global Elimination of Cervical Cancer"

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- Submit your text question using the Questions pane & click 'Send' button
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Completion of survey is requested – all registered participants will receive an email with this link

Presenter

Dr. Marc Steben, MD, CCFM, FCFM

- Chair, Canadian HPV Prevention Network
- Family Physician, Family Medicine Group 1851
- Board Member, International Papillomavirus Society

- Montreal, Quebec, Canada

Accelerating Cervical Cancer Elimination: What you can do!

Marc Steben, MD

Chair, Canadian Network on HPV Prevention,

Social and Preventive Medicine Dept, School of Public Health, Université de Montréal

Board member, International Papillomavirus Society

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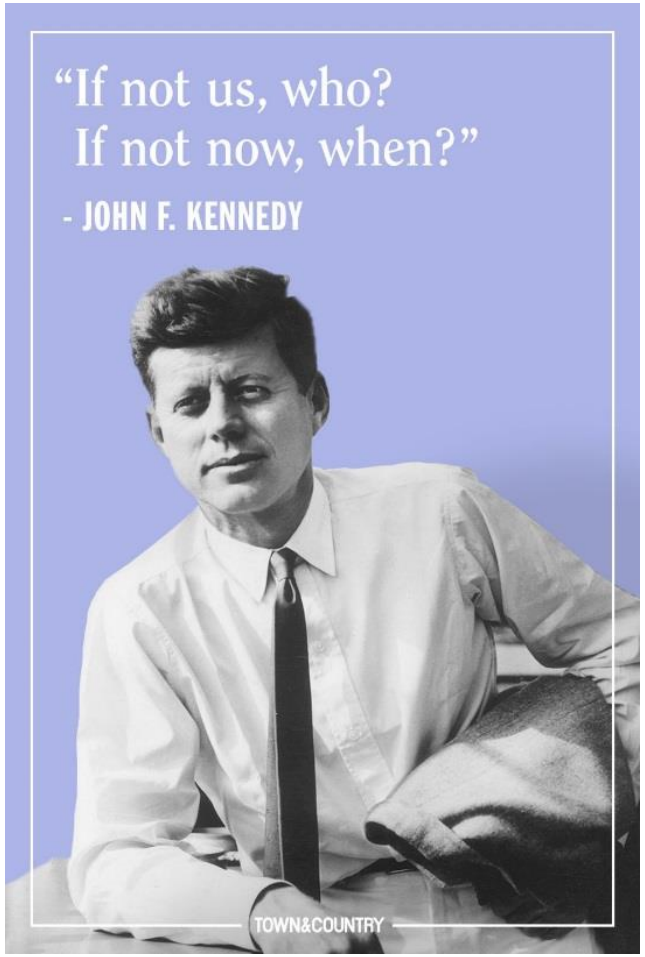
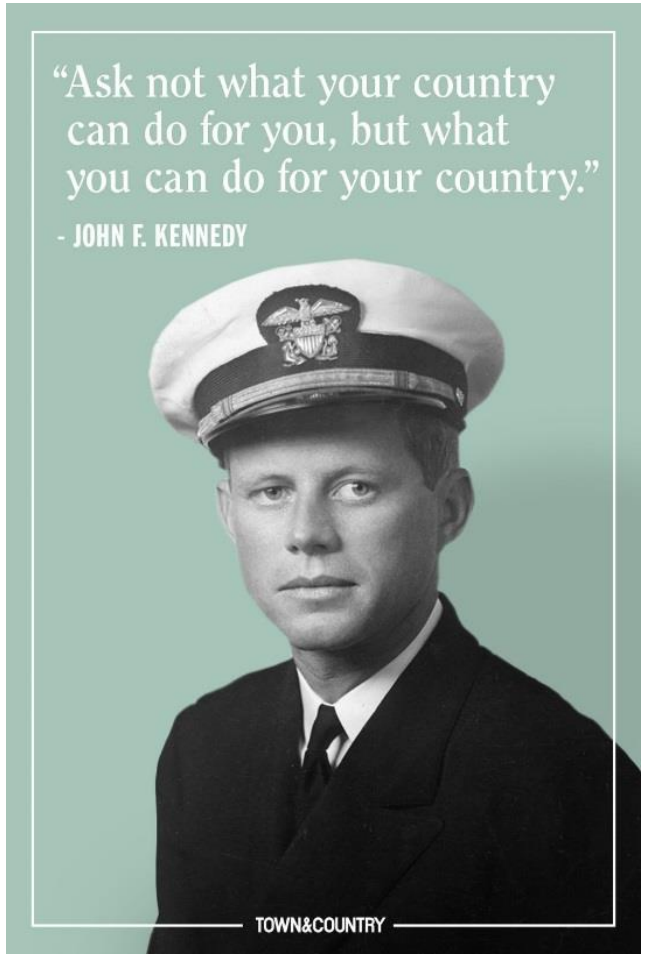
Famous quotes to inspire us



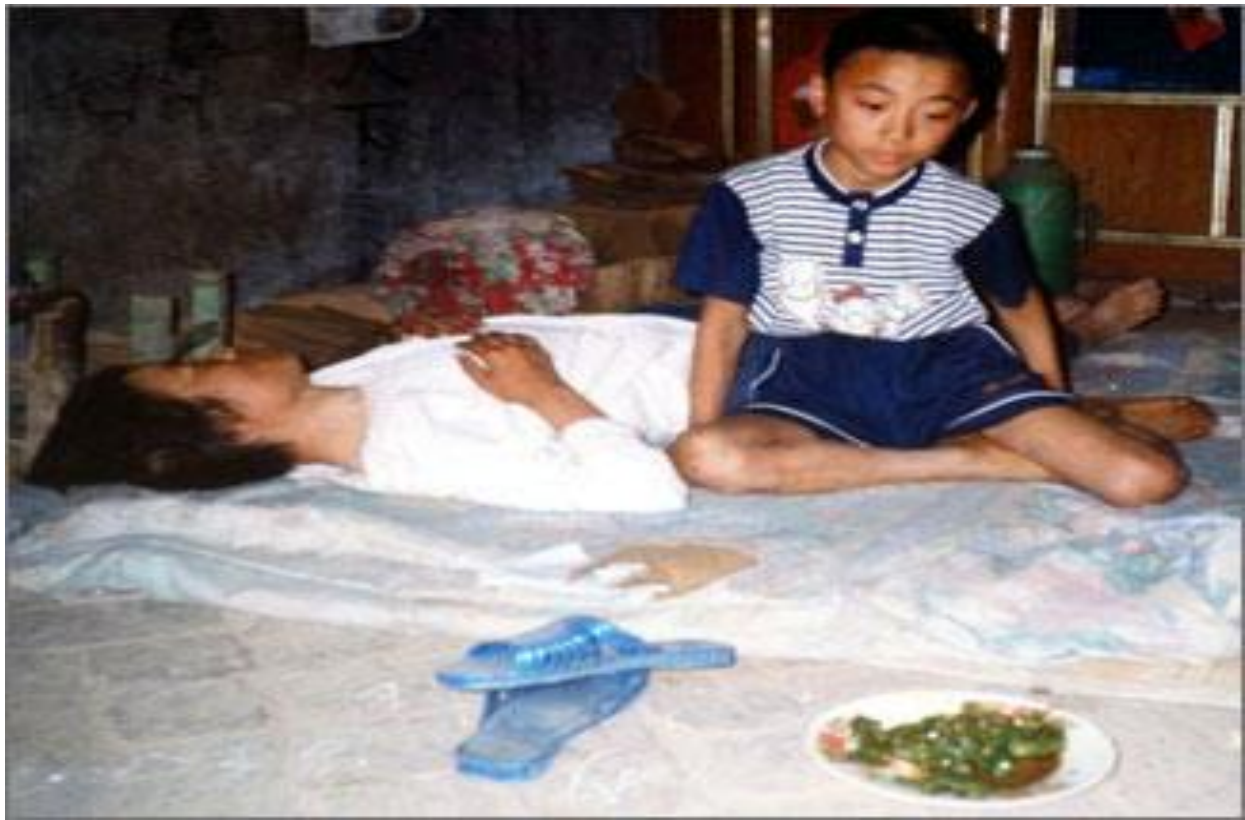


"BY 2030, CERVICAL CANCER IS EXPECTED TO KILL OVER 474,000 WOMEN PER YEAR—OVER 95% OF THESE DEATHS ARE EXPECTED TO BE IN LOW- AND MIDDLE-INCOME COUNTRIES."

Projections of mortality and burden of disease, 2004-2030.
www.who.int/healthinfo/global_burden_disease/projections/en/index.html

Cervical cancer claims younger lives than most cancers

- Cx Ca is second to only breast cancer as the leading cause of cancer in women worldwide.[1]
  - Global prevalence: ~2.3 million
  - Global incidence: ~500,000
- Nearly every minute of every day a woman is diagnosed with cervical cancer



1. Ferlay J, Bray F, Pisani P, Parkin DM. Lyon, France: IARC Press; 2004.

Webinar Learning Objectives:

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The prospects on elimination and the main declaration from WHO

This draft global strategy calls for a comprehensive, population-based approach to put all countries on the path to the elimination of cervical cancer within the century. It covers the period 2020-2030. The strategy proposes an approach that will enable countries to reach 2030 global targets for key interventions that, in turn, will lead to elimination of cervical cancer as a public health problem (hereafter referred to as "elimination"). The proposed targets for 2030 are:

- **90%** of girls fully vaccinated with the human papilloma virus ("HPV") vaccine by 15 years of age;
- **70%** of women are screened with a high-precision test [1] at 35 and 45 years of age; and
- **90%** of women identified with cervical disease receive treatment and care.

Originally from 90%

Cervical cancer elimination strategy

Download pdf

Draft global strategy towards the elimination of cervical cancer as a public health problem

Elimination of cervical cancer as a public health problem is a flagship project of WHO.

In May 2018, the Director-General of the World Health Organization announced a global call to action towards the elimination of cervical cancer, underscoring renewed political will to make elimination a reality, and called for all stakeholders to unite behind this common goal.

In January 2019, at its 144th Session, the Executive Board requested the Director-General to develop, in consultation with Member States and other relevant stakeholders, a draft global strategy to accelerate cervical cancer elimination, with clear targets for the period 2020–2030.

The zero draft of the Global Strategy towards the Elimination of Cervical Cancer was developed through a number of meetings with Member States representatives and technical experts; it forms the basis of technical consultations with WHO Regions, Member States, technical experts and other partners in the period May-July 2019. This global dialogue will inform the continuing development of the draft and a final version for consideration by the Seventy-third World Health Assembly, through the Executive Board at its 146th session.

https://www.who.int/cancer/cervical-cancer/cervical-cancer-elimination-strategy

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Limits of Primary Prevention Measures for HPV… before HPV vaccines became available

- Primary prevention
  = protection before exposure
  = limit acquisition of infection
  - Abstinence protects…while it lasts
  - Most people will become sexually active
  - Marriage does not protect against HPV
  - Condoms are good, but far from perfect

- Parents underestimate sexual behaviour of their teenager[1]
  - Too late to maximize benefits of HPV vaccine!

Main recommendations - Canada

NACI: National Advisory Committee on Immunization

- Advisory committee of experts in the fields of pediatrics, infectious disease, immunology, medical microbiology, internal medicine and public health
- Recommendations for vaccine use in Canada

NACI Recommendations

Females	**2v, 4v or 9v HPV vaccine is recommended for females:** • Immunocompetent **aged 9-14** according to either a 2-dose or 3-dose immunization schedule • Immunocompetent **aged ≥15** according to a 3-dose immunization schedule
Males	**4v or 9v HPV vaccines is recommend for males:** • Immunocompetent **aged 9-14** according to either a 2-dose or 3-dose immunization schedule • Immunocompetent **aged ≥15** according to a 3-dose immunization schedule
General	• HPV vaccines should be administered using a 3-dose schedule in **immunocompromised** populations according to **existing age guidelines** • There is **insufficient evidence** at this time to **recommend**, at a population level, **re-immunization with 9v HPV** vaccine in individuals who have completed an immunization series with another HPV vaccine.

Note the NACI recommendations do not have an upper age limit for vaccination for men or women

A Review of the Impact and Effectiveness of the Quadrivalent Human Papillomavirus Vaccine

10 Years of Clinical Experience in Canada

Steben M et al.
J Obstet Gynaecol Can 2018;40(12):1635–1645

Study Design

Primary Objective

Assess the real-world impact of 10 years (from 2006 to 2016) of publicly funded qHPV vaccination

Methods

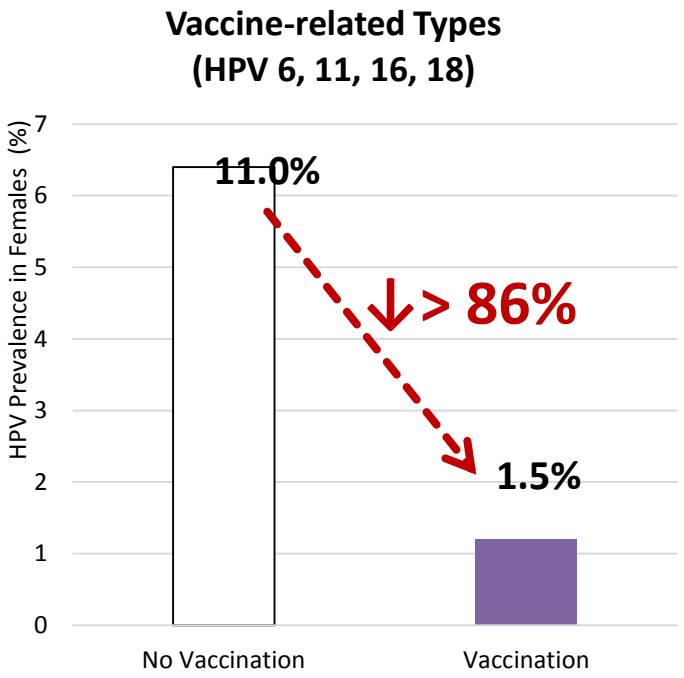
- Systematic literature review from 2006 to 2016
- "Pre- vs post-public vaccination program" or "unvaccinated vs vaccinated" population

Outcomes Assessed

- HPV infection
- HPV-associated AGW
- HPV-associated cervical dysplasia and cervical intraepithelial neoplasia

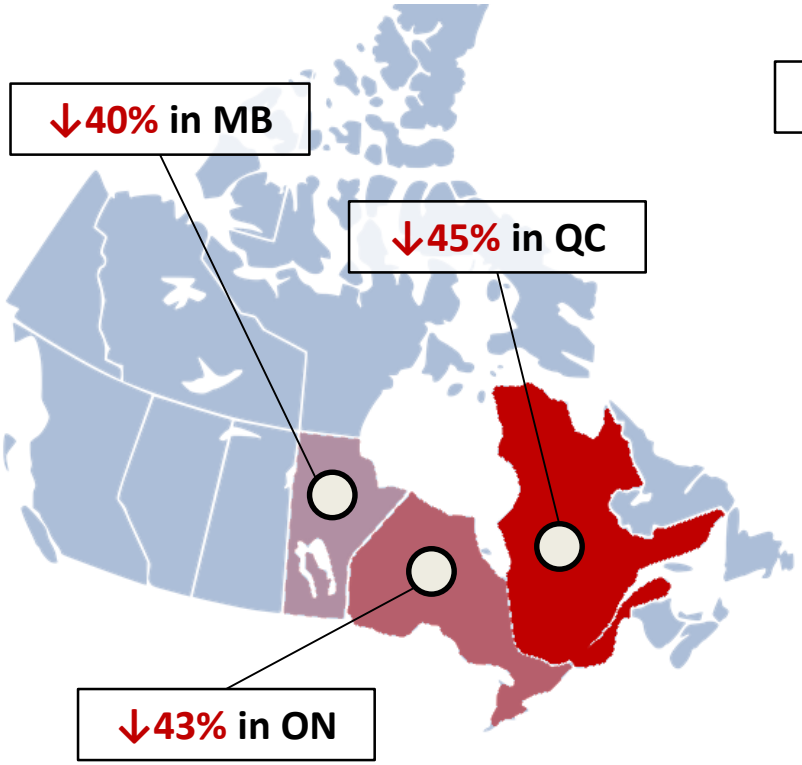
Results & Conclusions

HPV Infection

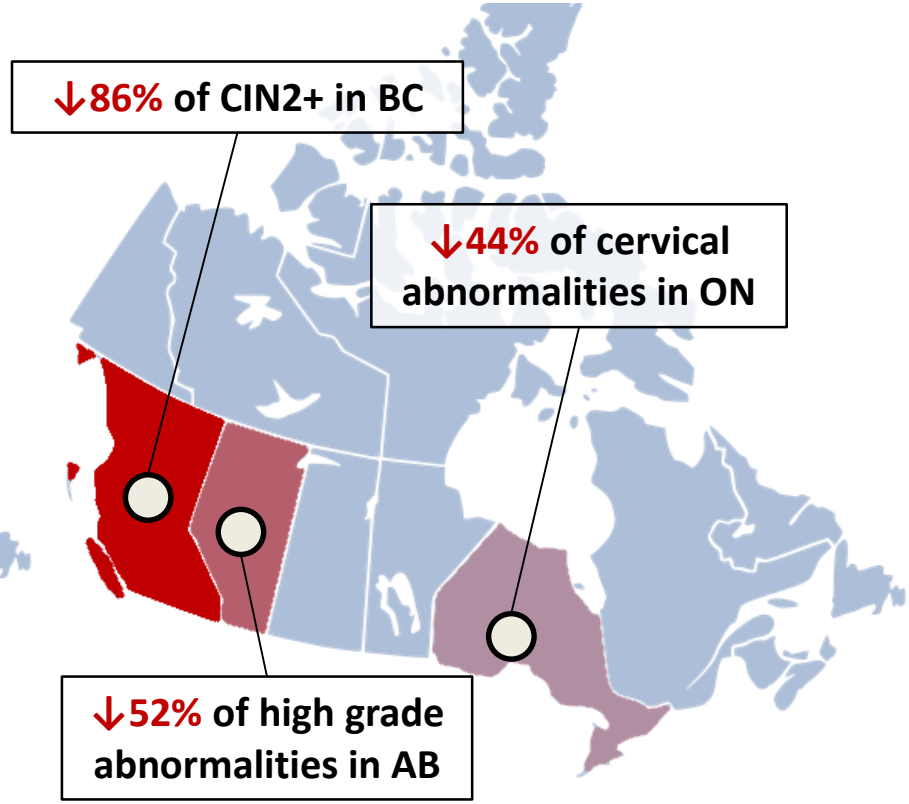


- **Non-vaccine-related types were comparable across vaccination status.**

HPV-associated AGW



HPV-associated High Grade Lesions



Conclusions

- **These results highlight the success of the vaccination program in Canada.**
- **The benefits of nine-valent HPV vaccine in Canada will likely be assessed within the next decade**

FIGURE 1.3

Percentage of girls in immunizing grade who completed human papillomavirus vaccine series based on provincially/territorially recommended vaccination schedules,[1] by province/territory — most recent vaccination year

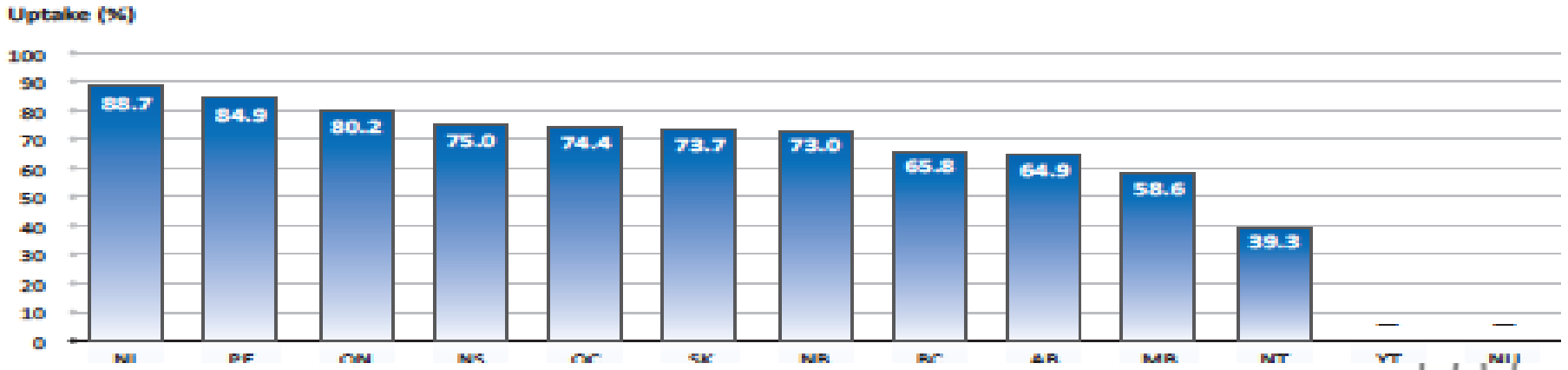
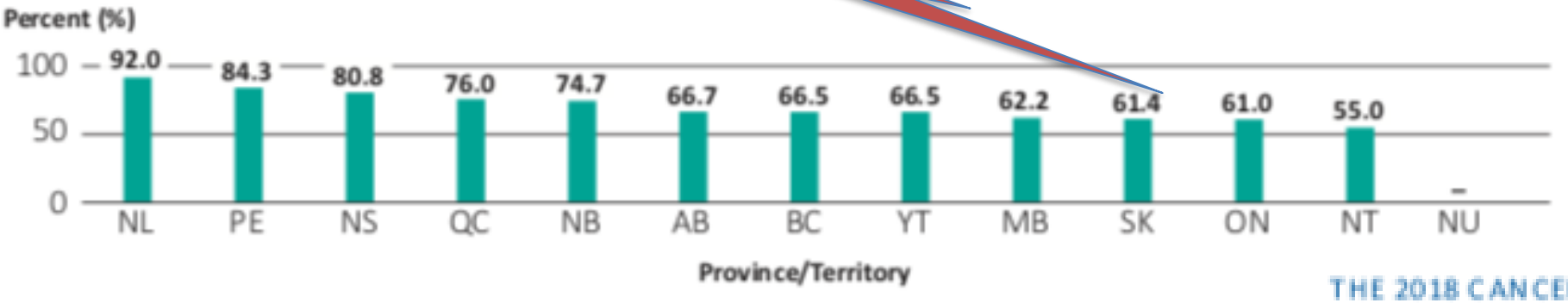


FIGURE 5.3

Percentage of girls who received a full course [illegible] papillomavirus (HPV) vaccination from school-based HPV immunization programs, by ju[illegible]tion — most recent reported year[2]



[1] As of the 2015/16 school year, the full course of vaccination for school-based HPV vaccination programs is three doses in AB, S doses in all other provinces and territories. [2] 2015/16: MB, ON, NS, PE, NL, NT; 2016: SK; 2016/17: BC, AB, QC, NB, YT. "—" Data not available. Data source: Provincial and territorial immunization programs.

Ongoing long term follow-up studies: immunogenicity and effectiveness

4vHPV vaccine: no breakthrough cases

- 10 years for boys and girls age 9-15 yo[1]
- 12 years for women age 16-23 yo[2]
- 10 years for men age 16-26 yo[3]
- 10 years for women 24-45 yo[4]

9vHPV vaccine

- 6 years for boys and girls 9-15 yo[5]

1.Ferris DG et al Pediatrics 2017; 2.Kjaer SK et al CID 2018; 3.Goldstone S et al Abstract presented at ASCO 2018; 4.Das R et al Abstract presented at Eurogin 2018; 5.Luxembourg A et al: Abstract presented at IPV 2018

RESEARCH

Quadrivalent human papillomavirus vaccination in girls and the risk of autoimmune disorders: the Ontario Grade 8 HPV Vaccine Cohort Study

Erin Y. Liu MSc, Leah M. Smith PhD, Anne K. Ellis MD MSc, Heather Whitaker PhD, Barbara Law MD, Jeffrey C. Kwong MD MSc, Paddy Farrington PhD, Linda E. Lévesque PhD

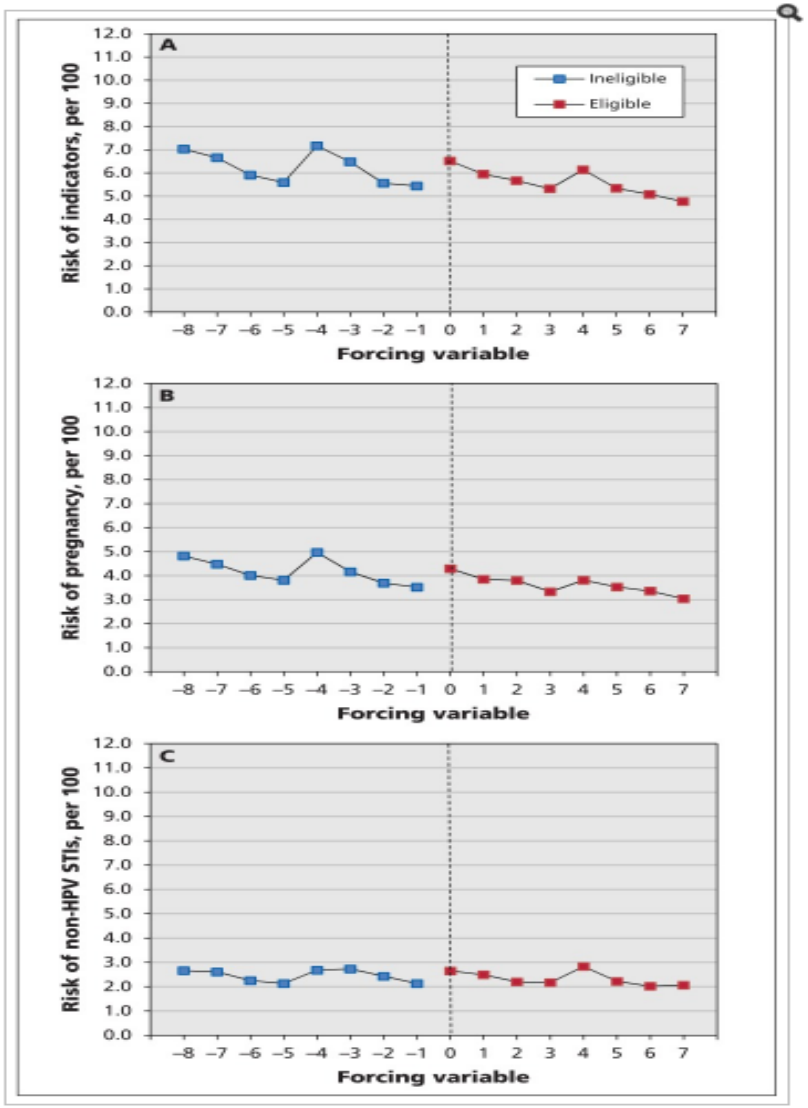
Cite as: *CMAJ* 2018 May 28;190:E648-55. doi: 10.1503/cmaj.170871

RESULTS: The study cohort consisted of 290 939 girls aged 12–17 years who were eligible for vaccination between 2007 and 2013. There was no significant risk for developing an autoimmune disorder following HPV4 vaccination (n = 681; rate ratio 1.12, 95% CI 0.85–1.47), and the association was unchanged by a history of immune-mediated disorders and time since vaccination.

Exploratory analyses of individual autoimmune disorders found no significant risks, including for Bell palsy (n = 65; rate ratio 1.73,95% CI 0.77–3.89), optic neuritis (n = 67; rate ratio 1.57, 95% CI 0.74–3.33) and Graves disease (n = 47; rate ratio 1.55,95% CI 0.92–2.63).

We did not observe an increased risk of autoimmune disorders following HPV4 vaccination among teenaged girls. These findings should reassure parents and health care providers.

Effect HPV vaccination on clinical indicators of sexual behaviour among adolescent girls: the Ontario grade 8 HPV vaccine cohort



- "Strong evidence that HPV vaccination does not have any significant effect on clinical indicators of sexual behaviour among adolescent girls"

Absence of Herd protection in males in Canada: Data from two studies

Ontario study[1]

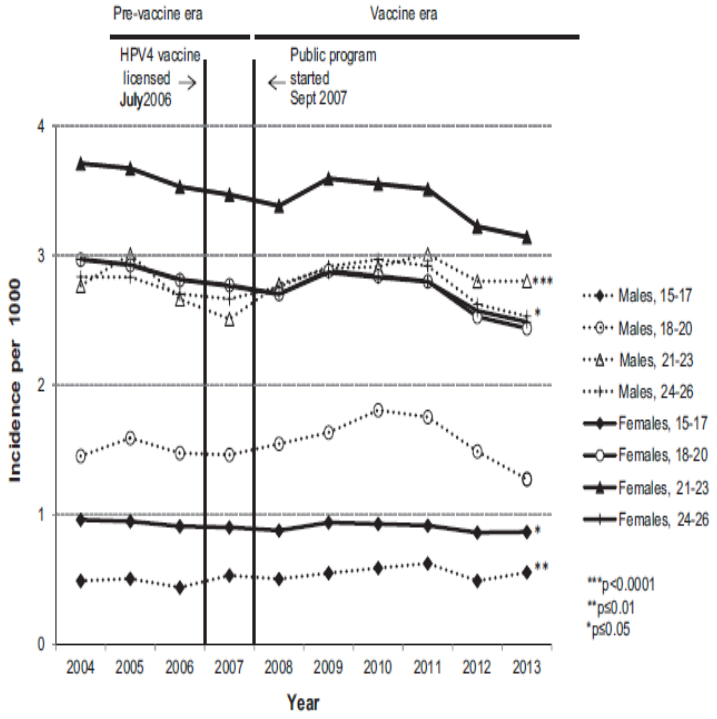


Fig. 2. Annual incident AGWs captured by physician office visits in 15–26 year olds, 2004–2013, for females (adjusted for Pap testing rate) and males (crude). Statistical significance reflects average annual changes in incidence relative to 2004.

Male AGW incidence rates increased an average of 4.1%, 2.8%, and 0.9% per year in 15–17, 21–23, and 24–26 year old males respectively

Quebec study[2]

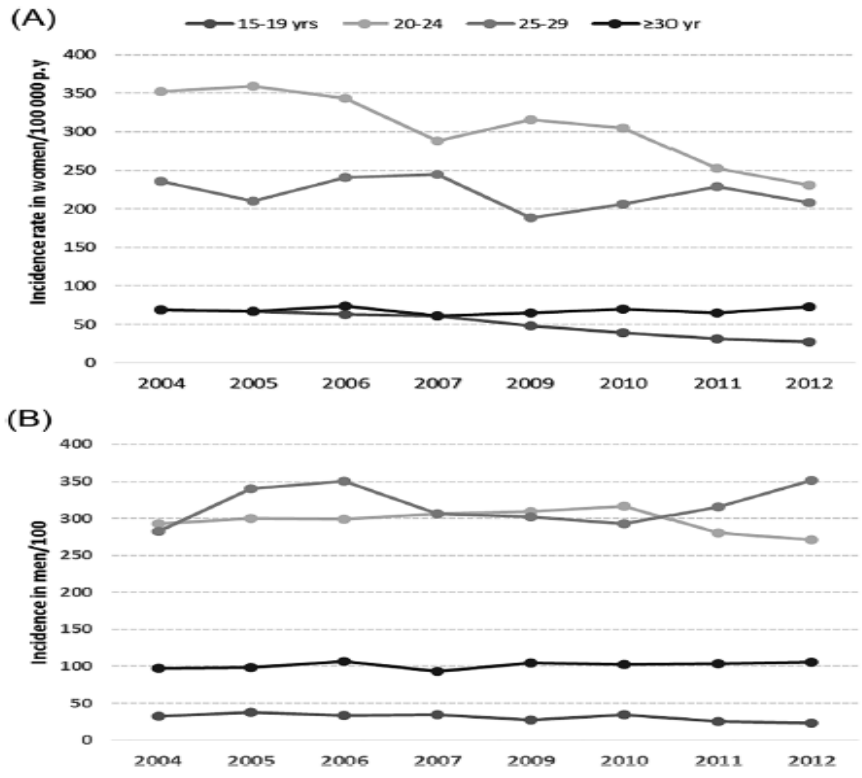


FIGURE 4 AGW Incidence rate by sex and age group, Québec, 2004-2012 (A) women (B) men

Females(20-24yrs) the peak incidence declined from 342.9/100 000 (2006) to 230.2/100 000(2012).
No change over time was observed in the peak incidence among males aged 25-29 years

1. Guerra FM et al. Early impact of Ontario's human papillomavirus (HPV) vaccination program on anogenital warts (AGWs): A population-based assessment. Vaccine 34 (2016) 4678–4683
2. Steben M et al. The early impact of human papillomavirus vaccination on anogenital warts in Québec, Canada. J Med Virol. 2018;90:592–598

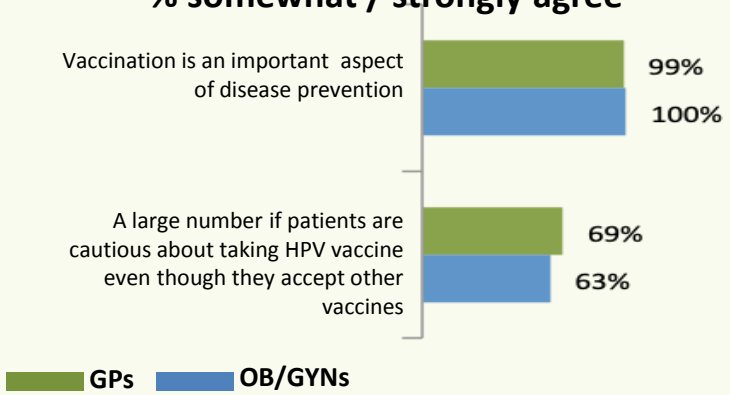
KEYFINDINGS

Physicians

Number of GPs administering / recommending HPV vaccine to patients

83% GPs routinely administer / recommend HPV vaccine to adults

% somewhat / strongly agree



Strongly / somewhat agree with safety concerns around HPV vaccine

11% GPs concerned about safety of HPV vaccine

5% OB/GYNs concerned about safety of HPV vaccine

GPs OB/GYNs

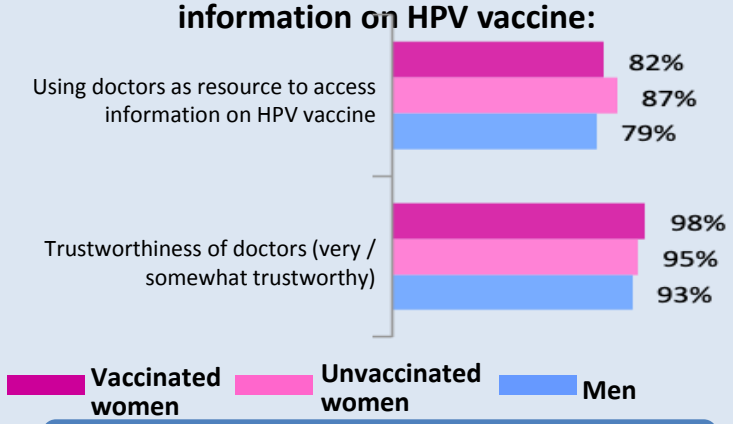
Most GPs administer / recommend HPV vaccine to adults, and customers say doctors are trustworthy source

Physicians and consumers agree that vaccination is an important aspect of disease prevention

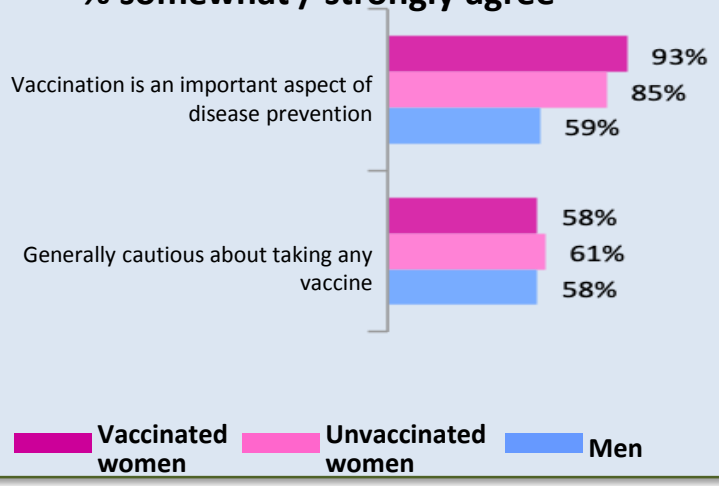
Concern over vaccination safety is low among physicians, however higher among consumers

Consumers

Doctors are most common and most trustworthy resource compared to all other resources to access information on HPV vaccine:



% somewhat / strongly agree



Strongly / somewhat agree with safety concerns around HPV vaccine

26% Vaccinated women not sure about safety of HPV vaccine

40% Unvaccinated women not sure about safety of HPV vaccine

36% Men not sure about safety of HPV vaccine

Vaccinated women Unvaccinated women Men

KEY FINDINGS

Physicians

Cost / private insurance is a barrier
(% Moderate / major barrier)

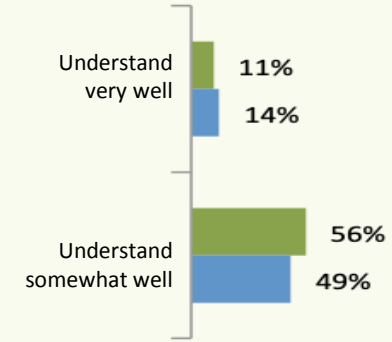
GPs: 95% say moderate / major barrier

OB/GYNs: 92% say moderate / major barrier

GPs OB/GYNs

Cost isn't as much of a barrier to the HPV vaccine as physicians believe

Physicians opinion how well their patients understand HPV



GPs OB/GYNs

Consumers are more knowledgeable about HPV than physicians believe

Conversations with patients

GPs: 60% routinely discuss HPV vaccinations with patients

OB/GYNs: 66% routinely discuss HPV vaccinations with patients

GPs: 81% get vaccinated when recommend their patient gets vaccinated

OB/GYNs: 80% get vaccinated when recommend their patient gets vaccinated

GPs OB/GYNs

Consumers say recommendations / discussions would motivate them to be vaccinated

Consumers

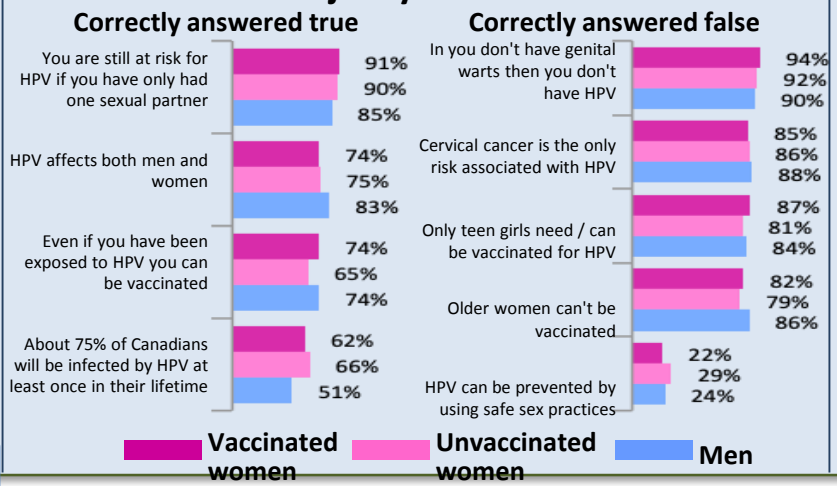
Reasons for not vaccinated against HPV (all reasons)

Women: 20% say cost is a reason for not vaccinated against HPV

Men: 18% say cost is a reason for not vaccinated against HPV

Women Men

Consumers correctly answered true / false for majority of statements

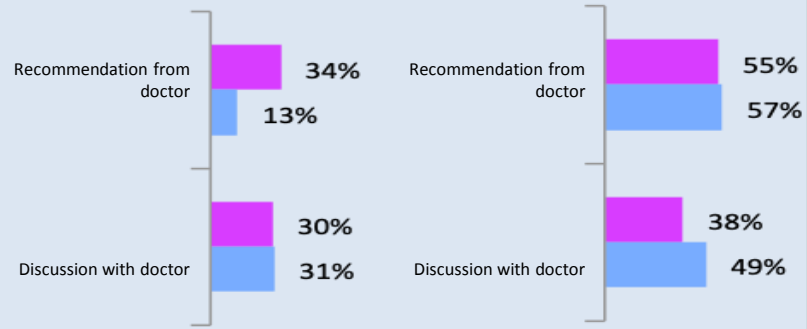


Vaccinated women Unvaccinated women Men

Motivation to be vaccinated

What motivated: Vaccinated

What would motivate: Unvaccinated



Women Men

Weak recommendation might be the problem?

- Primary care doctors treat the HPV vaccine differently from other routinely recommended immunizations…
- Hesitating to recommend it fully and on time
- The single biggest barrier to increasing HPV vaccination is not receiving a health care provider's recommendation
- That's more of an issue than parents' decisions to refuse or delay HPV vaccination.

http://www.npr.org/sections/health-shots/2015/10/22/450827102/doctors-not-parents-are-the-biggest-obstacle-to-the-hpv-vaccine

Communication efficace en vaccination VPH

(*Effective communication in HPV vaccination*)

Des mots et des faits pour améliorer son utilisation!

(*Words and facts to improve its use*!)

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Ph D, MA
Équipe de recherche en soins de première ligne
CISSS Laval

HPV Vaccine Counselling

Keep the message simple:

the HPV vaccine is

1. effective
2. safe
3. recommended

Impact on cancers already measurable

Malignancy	HPV vaccinated women Person yrs	n	Rate (95%CI)	Non-HPV vaccinated women Person yrs	n	Rate (95% CI)
Cervix cancer	65,656	0	-	124,245	8	6.4 (3.2, 13)
Vulva cancer	65,656	0	-	124,245	1	0.8 (0.1, 5.7)
Oropharyngeal cancer	65,656	0	-	124,245	1	0.8 (0.1, 5.7)
Other HPV cancers*	65,656	0	-	124,245	0	-
All HPV associated invasive cancers	65,656	0	-	124,245	10	8.0 (4.3, 15)
Breast cancer	65,656	2	3.0 (0.8,12)	124,245	10	8.0 (4.3, 15)
Thyroid cancer	65,656	1	1.5 (0.2,11)	124,245	9	7.2 (3.8, 14)
Melanoma	65,656	3	4.6 (1.5,14)	124,245	13	10.5 (6.1, 18)
Non-melanoma skin cancer	65,656	2	3.0 (0.8,12)	124,245	3	2.4 (0.8,7.5)

*vaginal carcinoma, anal carcinoma

- Finland populational register
- June 2007-Dec 2015

Luostarinen, T International Journal of Cancer, 2018

Table 1. NNV Estimates by case of diseases prevented by the nonavalent vaccine in Canada

Diseases prevented	Nb of cases annually	HPV Prevalence (%)	Proportion Attributed to HPV-9 vaccine types (%)	Nonavalent Vaccine Efficacy (%)	NNV
Women					
Cervical cancer	1,295[1]	100[1]	89.3[4]	96.7[10]	165
Anal cancer	338[1]	92[5]	97.3[8]	74.9[12]	816
Vulvar Cancer	410[1]	25[5]	85.0[7]	96.7[10]	2194
Vaginal Cancer	80[1]	74[5]	80.0[7]	96.7[10]	4036
Any HPV cancers	**2123**				**117**
CIN 2/3	52,000[2]	96.3[4]	85.0[6]	96.7[10]	4
Genital warts	22,755[3]	100[14]	90.0[3]	99.0[11]	9
Any HPV disease	**76,878**				**3**
Men					
Anal Cancer	150[1]	92[5]	97.3[8]	74.9[12]	1937
Genital warts	28,040[3]	100[14]	90.0[3]	89.4[13]	9
Any HPV disease	**28,190**				**9**

- **Vaccination of a cohort of 12 years old girls and boy**
- **Lifetime vaccine protection for the HPV type contained in the vaccine (no cross protection considered)**
- **Current vaccine recommendations and approved indications in Canada**
- **Epidemiology of HPV related disease and current screening management remain stable over time**

International Papillomavirus Conference Oct 2-6 2018

We are only starting to understand the full value of HPV vaccine

PROPHYLACTIC

To prevent new infections and transmission

- Youths and adolescents before sexual debut
- Adult women
  - *To 26, 30,* 45+…
- Males
  - To 18, 50+…
- Infants (EPI)

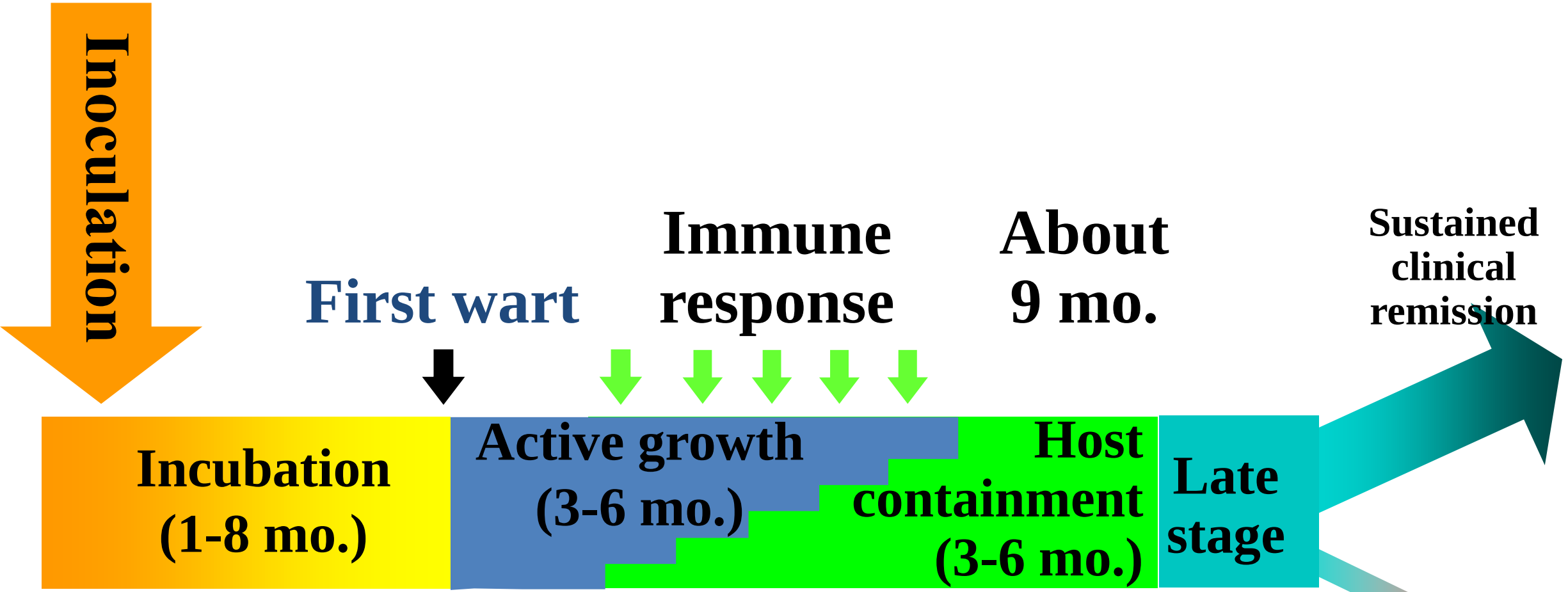
From Xavier Bosch, ICO, Barcelona

Limits of Secondary Prevention Measures for HPV

- Secondary prevention
  = protection after potential exposure
  = limit consequences of acquisition
  - No screening test for HPV as for HIV before engaging in condomless sex
  - No epidemiological sexual contact treatment as for gonorrhea or syphilis
  - No post exposure prophylaxis as for HIV
  - No pre exposure antiviral prophylaxis as for HIV

- No test or cure for someone who had a lesion or an infection
  - HPV test is for high risk HPV detection in the prevention of cervical cancer
  - Pap test screens for complications (of persistent high-risk HPV only for the cervix) and not of infections

- Most of those who are infected are asymptomatic



- No therapeutic antiviral option
- Most options destroy the lesions not the virus
- Immune stimulation may be better treatment?

Natural History of Ano-Genital Warts

Modified from Cox then Stanley

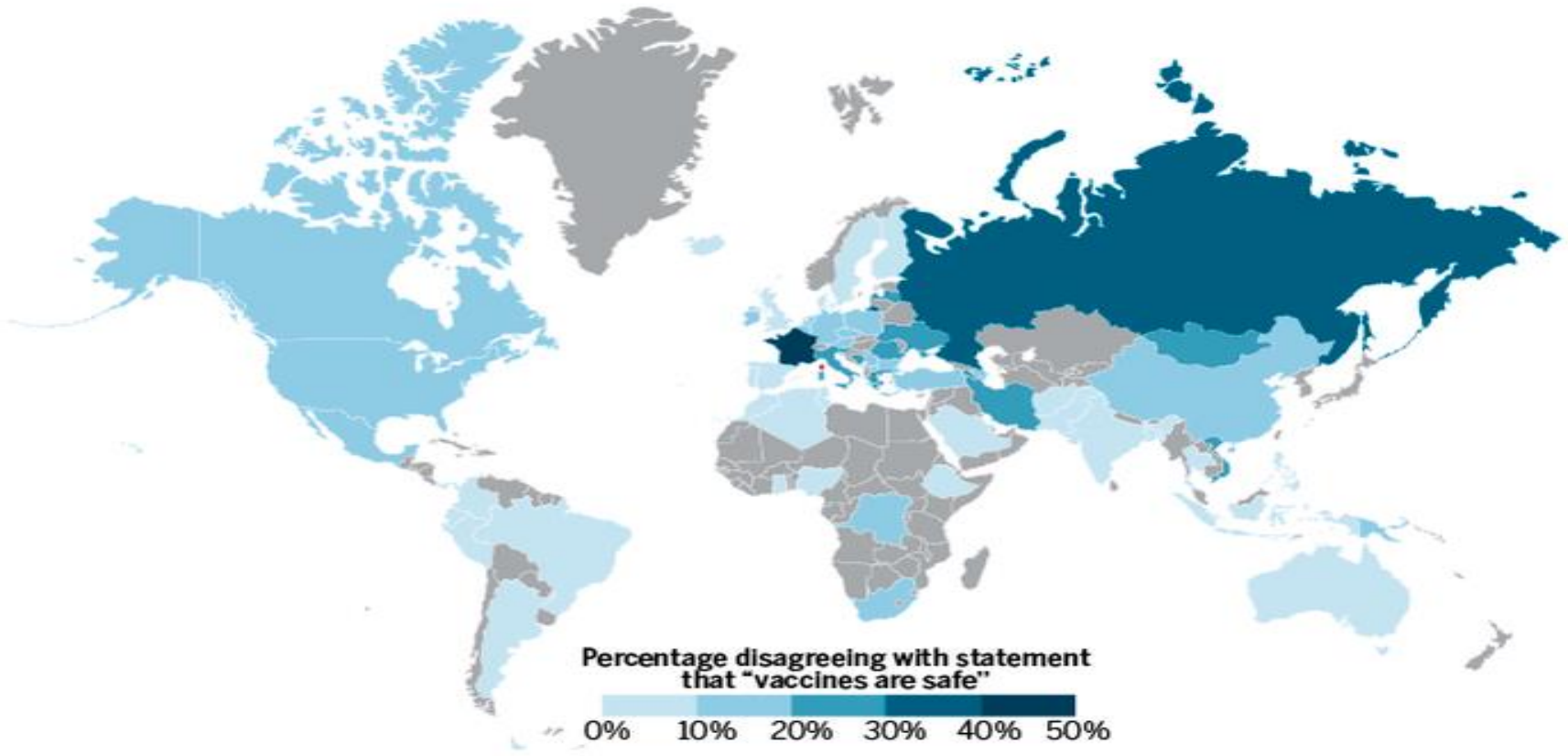
Is there value in immunizing people who have/had infections or lesions?

- Antibodies are
  - Type specific
  - Not present in the long term
  - Not protecting against reinfection or new infection
    - Even with the same HPV genotype
  - Decreasing in frequency
    - Females > heterosexual males > men having sex with men

Most people trust vaccines in Canada!

A matter of trust

A 2016 survey in 67 countries found that trust in vaccines is high overall but varies by country. Safety concerns were highest in Europe and Russia; in France, 41% disagreed with the statement that vaccines are safe.



CREDITS: (MAP) J. YOU/*SCIENCE*; (DATA) HEIDI LARSON *ET AL.*, *EBIOMEDICINE*

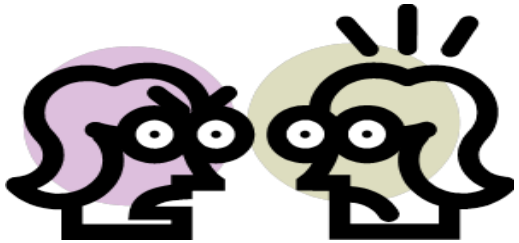
Predisposition of the patient to be vaccinated

If a vaccinator meets 4 patients (Quebec example):

are favorable to vaccination

is reluctant or concerned about real or presumed risks

The perception of risk varies from one person to the next



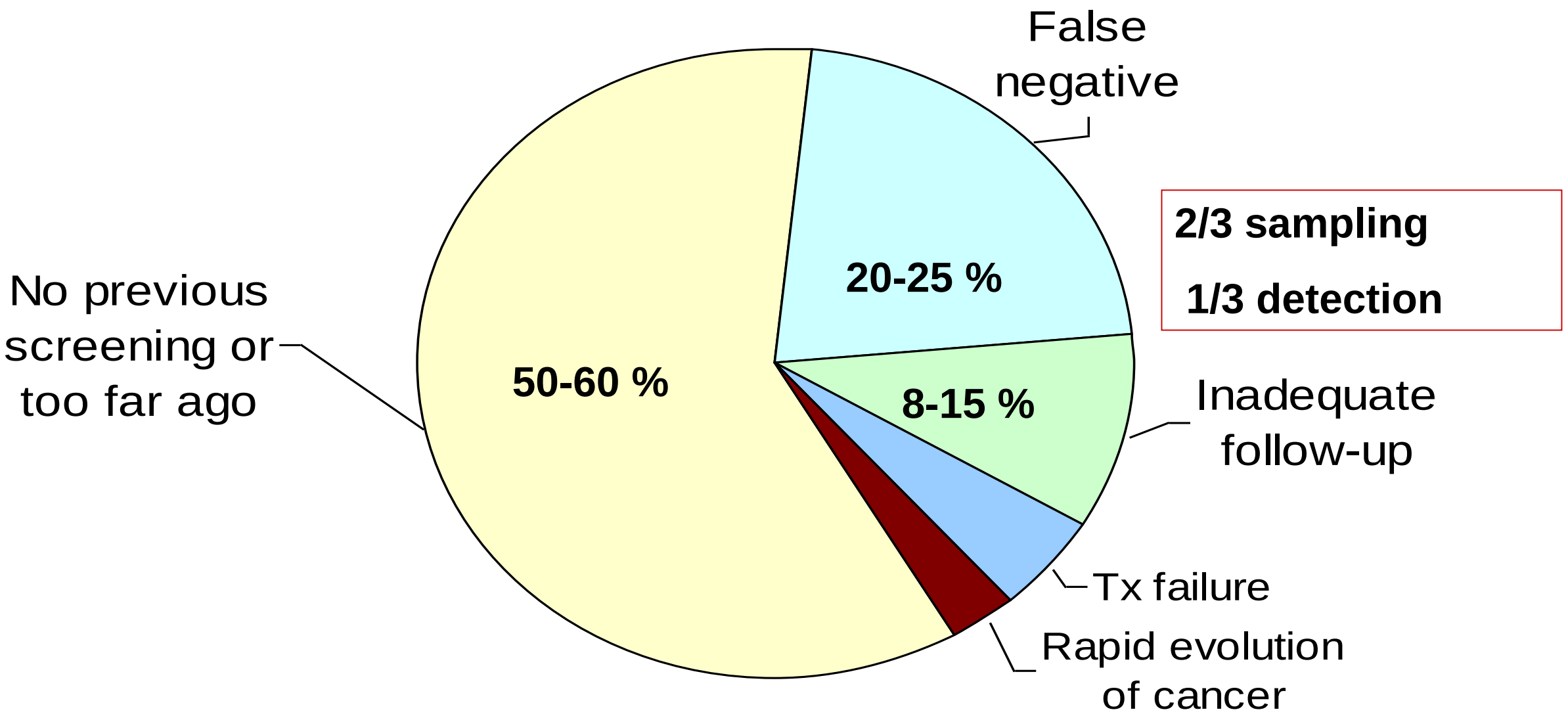
Publications du ministère de la Santé et des Services sociaux, 2013.
Available at: www.publications.msss.gouv.qc.ca/msss/document-000105/.

Secondary prevention technology

www.inspq.qc.ca

Institut national de santé publique Québec

Limits of screening with cytology



We will cause more harm than benefit if we dot not change our screening paradigm!

REVIEW ARTICLE

The Expected Impact of HPV Vaccination on the Accuracy of Cervical Cancer Screening: The Need for a Paradigm Change

Eduardo L. Franco,[a,b] Salaheddin M. Mahmud,[a,c,h] Joseph Tota,[a,b] Alex Ferenczy,[d,e,f] and François Coutlée[a,g]

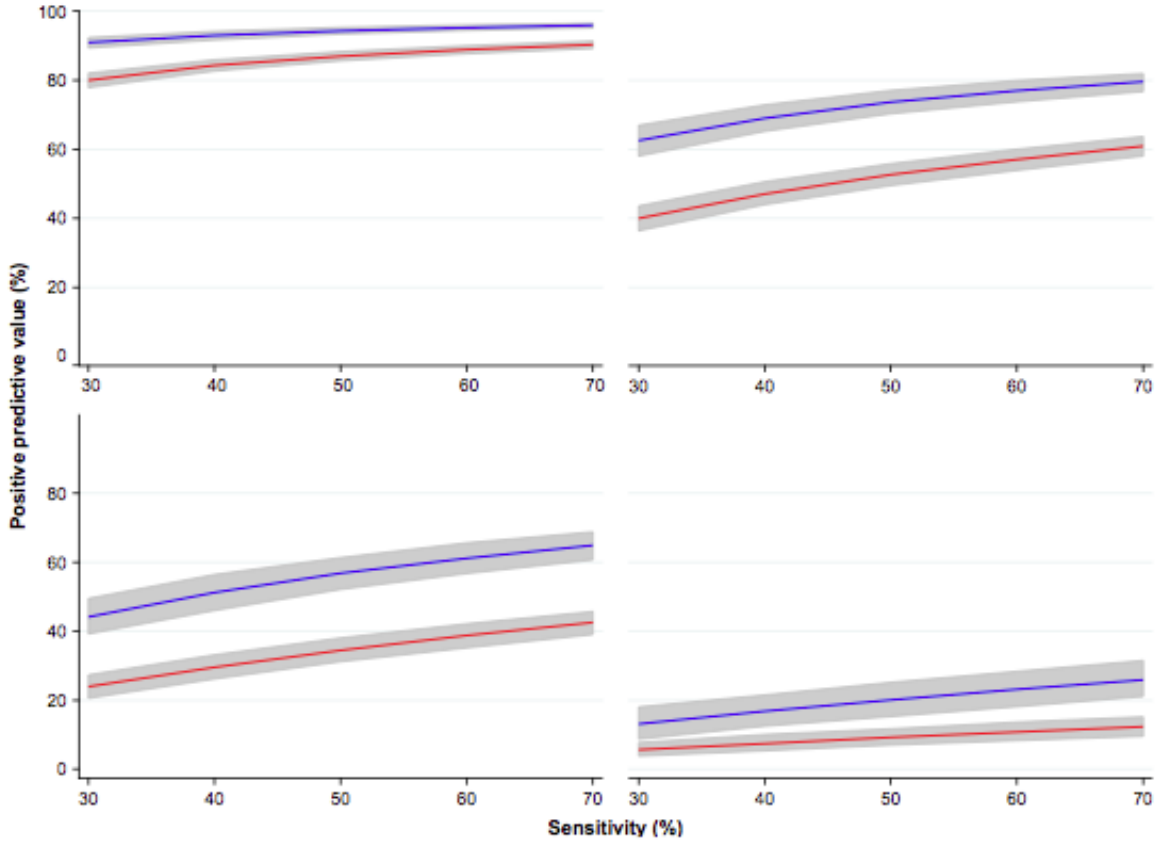


Figure 2. Joint effects of changes in sensitivity, specificity, and cervical lesion prevalence on the positive predictive value of cytology as a primary screening test. The two curves in each graph represent different specificity values of 98% (blue line) and 95% (red line). Each graph represents a different prevalence rate as follows: upper left: 40%, upper right: 10%, lower left: 5%, and lower right: 1%. The gray bands represent 95% credibility intervals (see text and legend for Figure 1 for details). Three of the prevalence scenarios are intended to illustrate situations found in Pap cytology screening in different settings as well as the ones anticipated post-vaccination. A 40% prevalence is shown to represent the situation found in triage following an initially positive referral HPV test.

But to optimize the value of the vaccine program we need new screening guidelines

- Vaccinated women should start screening at age 30, instead of 25 with HPV test.
- Furthermore, there is a strong rationale for applying longer intervals for re-screening HPV negative women than the currently recommended 5 years.
- For non-vaccinated women and for women vaccinated in their fifteenth year or later, the current protocol should be kept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journal homepage: www.elsevier.com

Cervical cancer screening in women vaccinated against human papillomavirus infection: Recommendations from a consensus conference

Paolo Giorgi Rossi [a, b], Francesca Carozzi [c, *], Antonio Federici [d], Guglielmo Ronco [e], Marco Zappa [f], Silvia Franceschi [g]

The Italian Screening in HPV vaccinated girls Consensus Conference group [1]

http://dx.doi.org/10.1016/j.ypmed.2016.11.020

Accuracy of HPV screening vs. cytology

Screening test	N	Sensitivity (95% CI)	Specificity (95% CI)
Detection of CIN2+			
Cytology (ASC-US+)	25	70.0% (62.5–77.6%)	91.9% (90.3–93.6%)
HC2	31	**90.4% (88.0–92.8%)**	**88.5% (87.0–90.0%)**
Co-testing*	13	94.2% (90.8–97.6%)	87.7% (85.0–90.3%)
Detection of CIN3+			
Cytology (ASC-US+)	21	74.6% (65.6–83.6%)	91.8% (90.0–93.7%)
HC2	**22**	**95.3% (93.3–97.3%)**	**89.0% (87.2–90.8%)**
Co-testing*	12	96.7% (93.7–99.7%)	82.9% (77.1–88.6%)

*Cytology (ASC-US+) and HC2

Updated meta-analysis data from Arbyn et al.[21,22]
In Bosch FX et al. Nature reviews Clinical oncology 2015

Comparison of Prevention Interventions

- Compared to secondary prevention, primary prevention is always:
  - Cheaper
  - More equitable
  - More efficient
  - More accessible

Examples:

Primary prevention	Secondary prevention
Seat belts, alcohol laws and driving laws	Emergency rooms
Condoms	Antiretroviral drugs

DISCUSSION

Are there any conditions for which we prefer to limit the «acquisition» rather than prevent the «disease»?

qHPV Vaccine Efficacy in ♀Exposed to Vaccine-related HPV Type Whose Infection has Cleared

(Seropositive, DNA Negative)

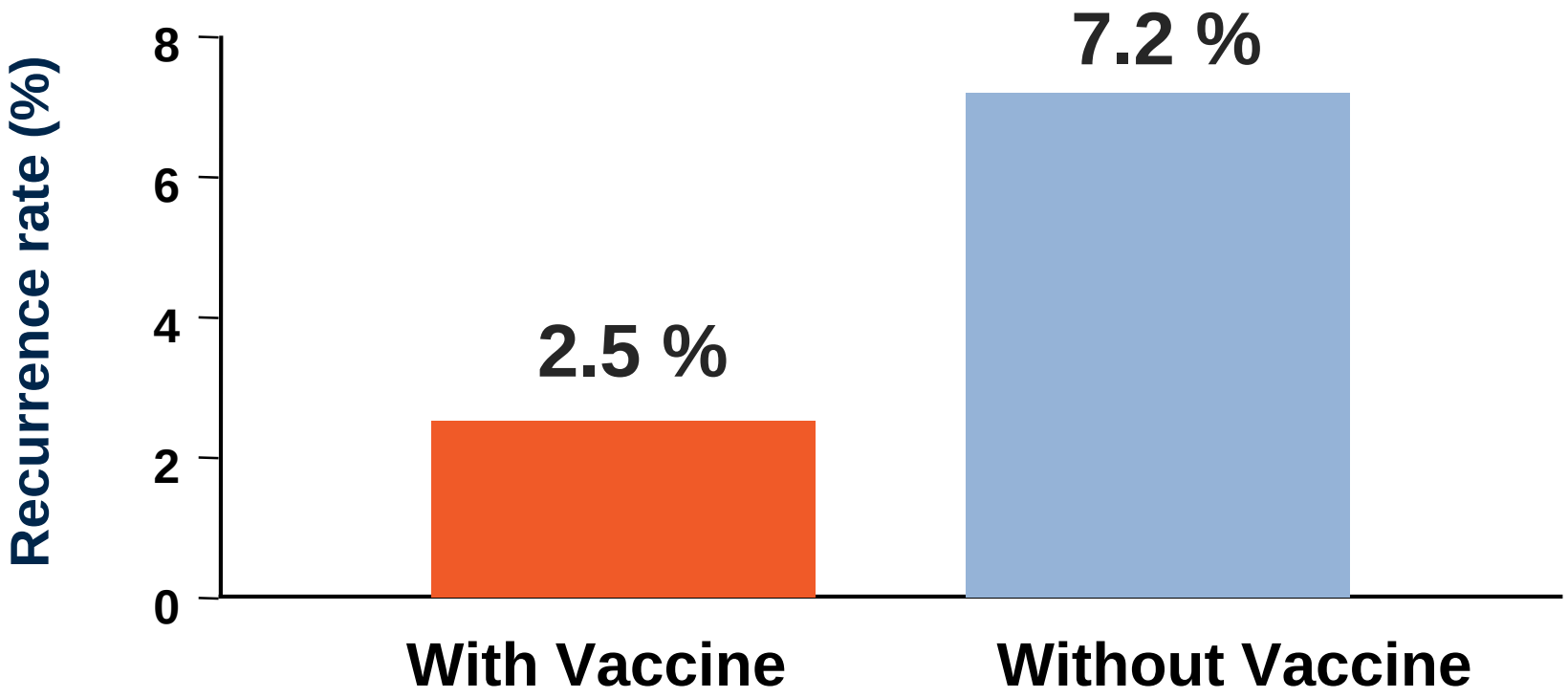
Endpoint	Quadrivalent Vaccine		Placebo		Efficacy (%)	95% CI
	n	Cases	n	Cases*		
CIN (any grade)	1,243	0	1,283	7	**100**	(29, 100)
External genital lesions	1,268	0	1,301	8	**100**	(40, 100)

This suggests efficacy against recurrence of disease with same vaccine HPV types (re-activation/re-infection)

MITT-2 analysis (Protocols 007, 013 and 015), HPV specific naive population; received at least one dose, case counting starts 30 days after dose 1.

Does vaccination after LEEP treatment prevent recurrence in patients with CIN 2/3 lesions?

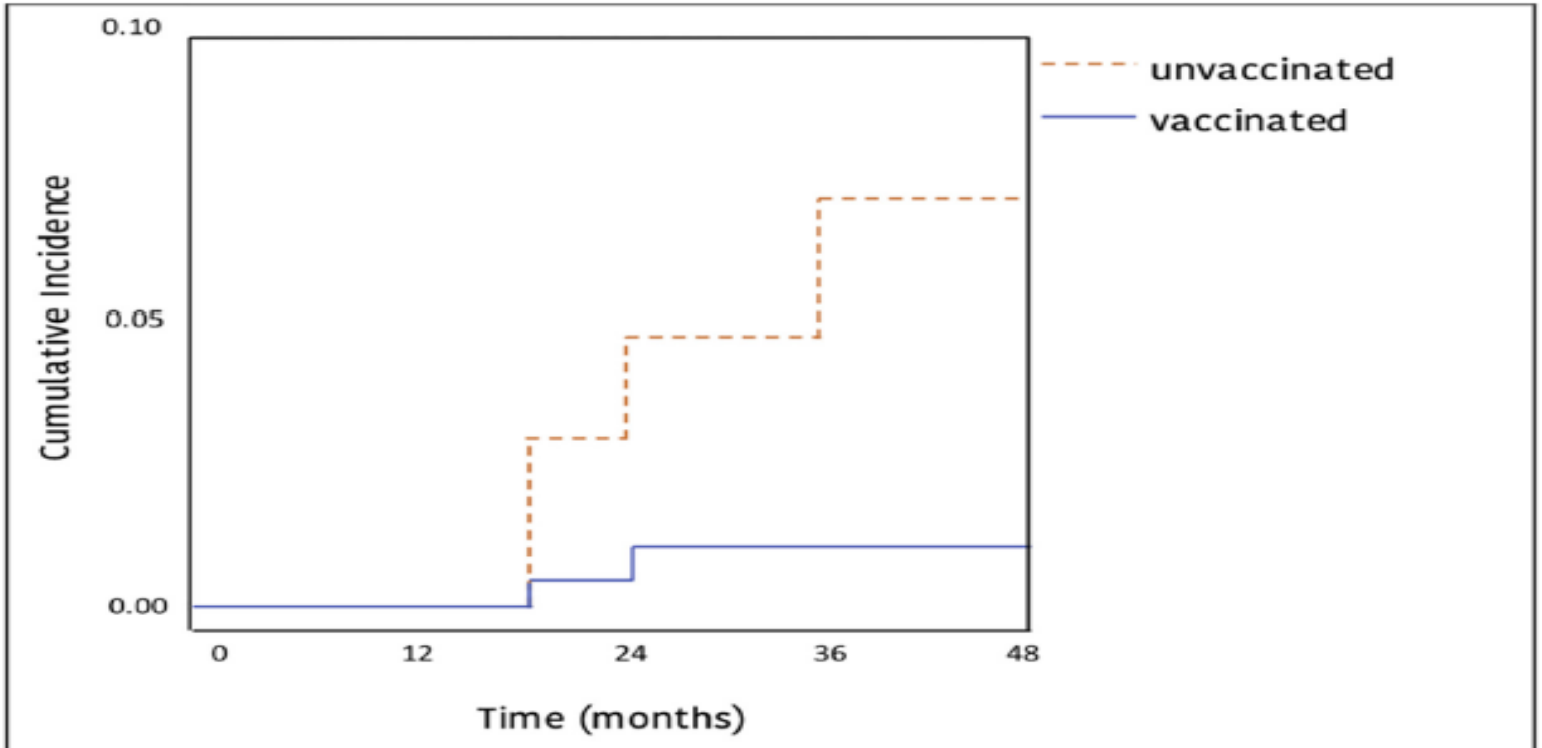
Lack of vaccination after LEEP treatment was a factor independent risk of recurrence of CIN 2/3 lesions; RR = 2,840 (p <0.01)



LEEP = loop electrosurgical excision procedure; RR = relative risk

Kang WD, *et al. Gynecol Oncol* 2013;130:264.

Impact of vaccination on disease relapse after cervical conization



CDR irrespective of causal HPV type (CIN2+)			
	V-group	NV-group	% risk reduction in rate with vaccine
No. of evaluable women	172	172	**81,2%** [95% CI: 34,3-95,7]
No. of women with CDR	2	11	
recurrence rate (%)	1.2	6.4	

Legend: CDR: clinical disease relapse; V-group: vaccinated patients; NV-group: unvaccinated patients. Impact of quadrivalent HPV vaccine on incidence of subsequent disease relapse among women who had undergone cervical conization; 95% CI: confidence interval of the estimates.

Clinical disease recurrence (CDR):

- **NV-group: 11 cases**
- **V-group: 2 cases**
- **Vaccination was associated with significant reduced risk of subsequent HPV-related high-grade CIN after cervical surgery by 81,2% (95%CI 34,3-95,7)**

This does not imply a therapeutic effect of the vaccines but underlines its role as an adjuvant to surgical treatment

We are only starting to understand the full value of HPV vaccine

PROPHYLACTIC

To prevent new infections and transmission

- Youths and adolescents before sexual debut
- Adult women
  - *To 26, 30,* 45+…
- Males
  - To 18, 50+…
- Infants (EPI)

AS PART OF THERAPY

To interrupt reinfections and transmission

- **HPV + women in screening**
- **Post treatments in CIN lesions**
- **RRP**
- **GW**
- **HPV cancer survivors**
- **Therapeutic / mixed vaccines**

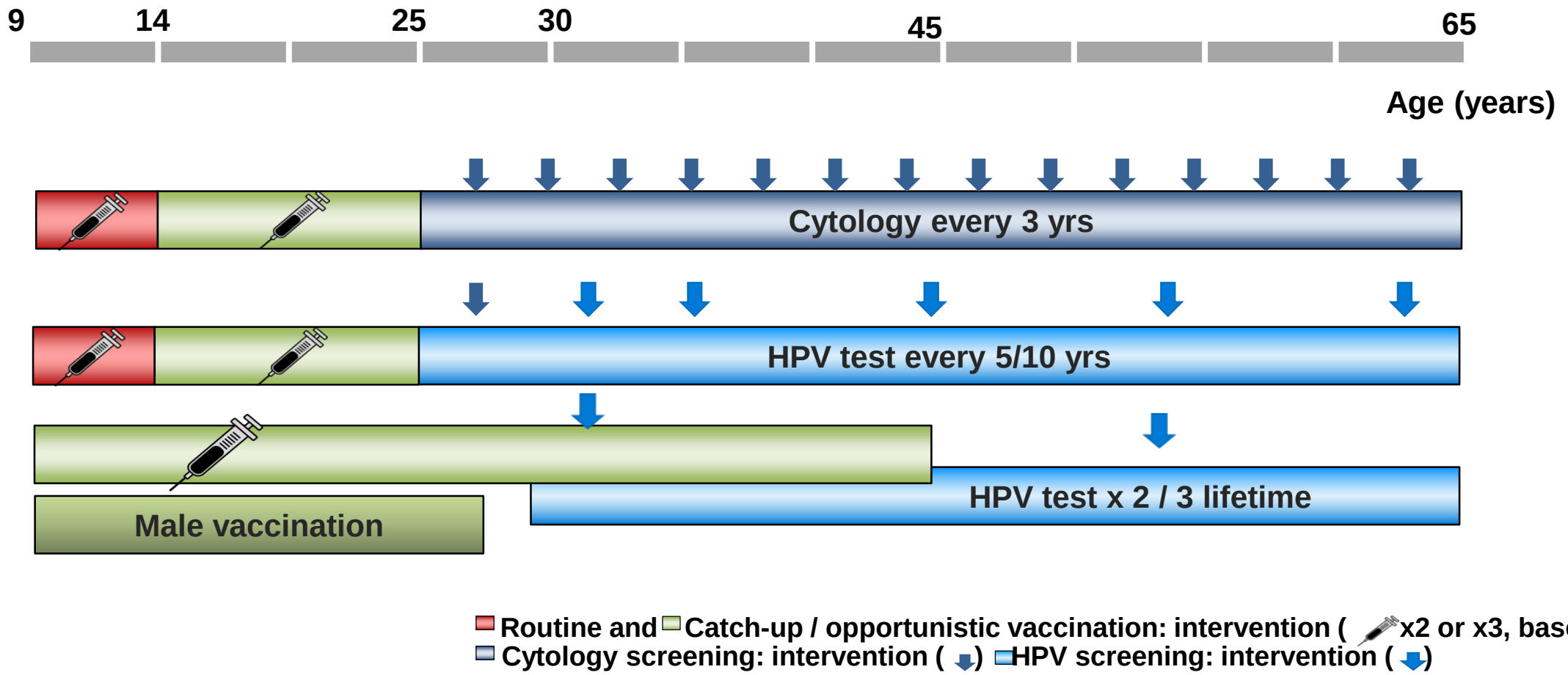
From Xavier Bosch, ICO, Barcelona

HPV vaccine efficacy in mid-adult women

Outcome	4vHPV (to age 45)	2vHPV (to age 55)
'per-protocol'/'according-to-protocol' (HPV negative)		
6M Persistent infection	**VE: 89.6% (95%CI 79.3–95.4)**	**VE: 82.9% (95%CI 53.8–95.1)**
CIN2+	VE: 83.3% (95%CI −37.6–99.6)	VE: 100% (95%CI −100.7–100.0)
External genital lesions	**VE: 100% (95%CI 30.8–100.0)**	NR
'intention-to-treat'/'total-vaccinated-cohort' (irrespective of HPV)		
6M Persistent infection	**VE: 49.0% (95%CI 35.5–59.9)**	**VE: 47.0% (95% CI 25.4-62.7)‡**
CIN2+	VE: 22.4% (95% CI −42.5–58.3)	VE: 29.1% (95% CI −22.5–59.6)‡
External genital lesions	VE: 8.5% (95% CI −126.6–63.4)	NR
Baseline seropositive but HPV-DNA-negative (previous infection)		
6M persistent infection (≥ 1 dose)	**VE: 66.8% (95% CI 3.8-90.5)**	NR
6M Persistent infection or + (3 doses)	NR	**VE: 86.4% (30.1–99.0)**

Bold blue: statistically significant under trial conditions

Current HPV vaccination and cervical cancer screening strategy in developed countries *and proposed FASTER initiative*



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To interrupt reinfections and transmission

- HPV + women in screening
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- RRP
- GW
- HPV cancer survivors
- Therapeutic / mixed vaccines

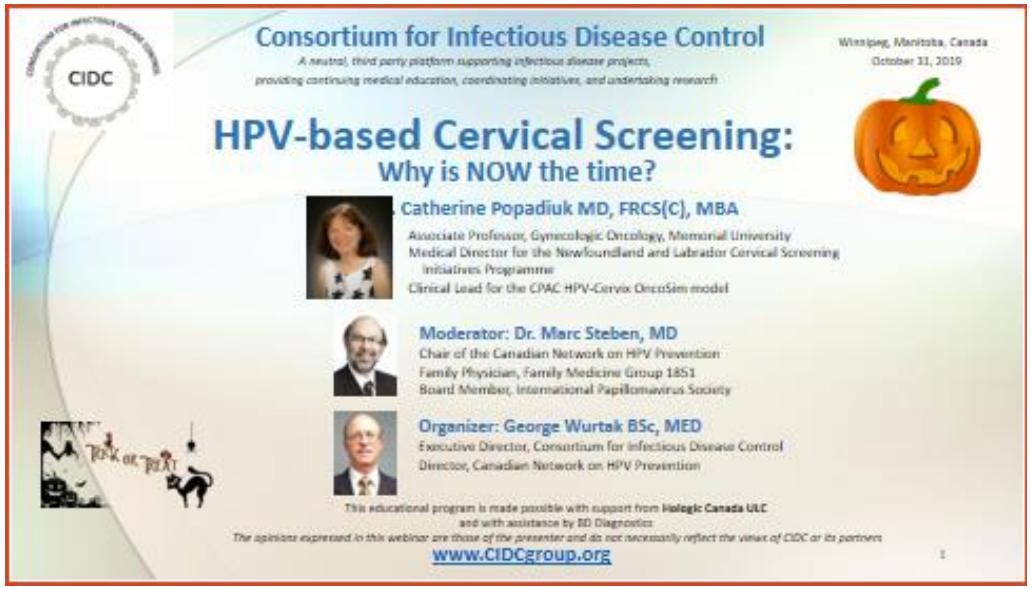
HIGH RISK GROUPS

To prevent infections, reinfections and transmission

- HIV cohorts
- MSM
- Transplants & immunosuppressed
- Autoimmune patients
- STI clinics
- Partners of HPV+
- Migrants / Marginal
- Abused children

From Xavier Bosch, ICO, Barcelona

CIDC & Canadian Network on HPV Prevention



RESOURCE: Informational Booklet

Counselling Patients About HPV Test Results

Transmission, Screening / Testing & Vaccination

CIDC staff recruited HPV (human papillomavirus) knowledge experts from across Canada to develop a useful and practical guide for primary care professionals when discussing HPV test results with patients. This document includes sections on: general information about HPV and cervical cancer screening; HPV testing and screening; sexual transmission of HPV; HPV vaccination; interpreting results to the patient; and complex psychosocial issues. Financial support for the development of this important resource was provided by Merck Canada Inc., and Roche Diagnostics - Division of Hoffman-LaRoche Ltd.

Click below to download the 48 page booklet:

Counselling Patients on HPV Test Results

https://www.cidcgroup.org/cidc-resources

Webinar Learning Objectives:

- Discuss the WHO goal of the global elimination of cervical cancer by 2030
- Address cervical cancer elimination from a prevention perspective
- **Describe current cervical cancer burden, challenges, and the projected increase in cervical cancer if changes are not implemented**
- Discuss the recently produced document entitled "Canada's Role in Accelerating Global Elimination of Cervical Cancer"

Cervical Cancer Incidence and Mortality

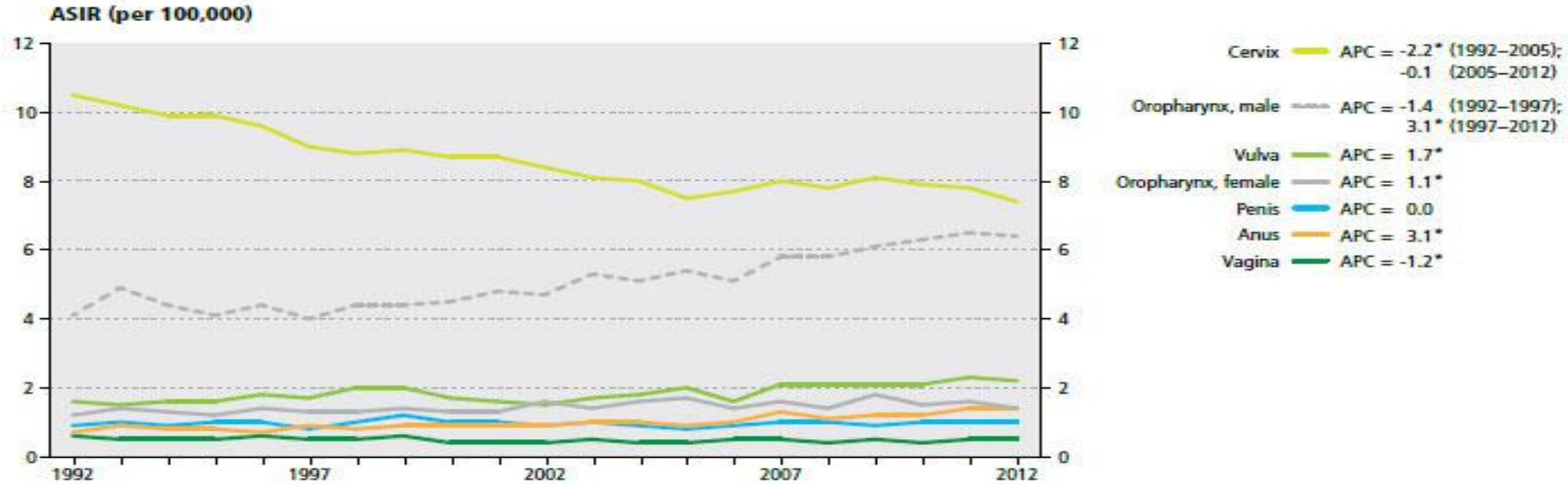
In 2016, there were in Canada

- 1500 new diagnosed cases and
- 400 deaths

Meaning that one Canadian woman dies of cervical cancer every day

Canadian trends in cervical cancer

FIGURE 7.3 Trends in age-standardized incidence rates (ASIR) and annual percent change (APC)[1] for HPV-associated cancers[4], Canada, 1992–2012[5]



* Significant increase or decrease in APC, $p<0.05$

[1] APCs refer to 1992–2012 calendar years, unless there was a changepoint, in which case the applicable years are indicated.

[4] Includes selected topographies and morphologies. Refer to Table A12 for definitions.

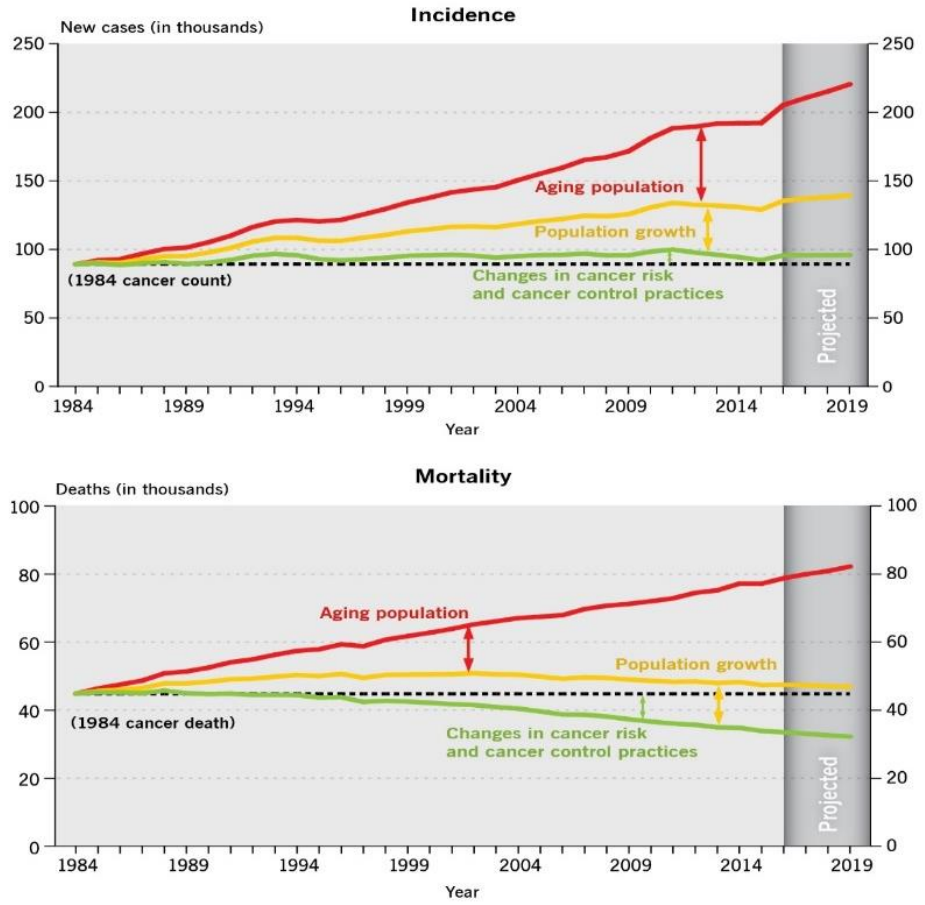
[5] Actual incidence data were available to 2012 for all provinces and territories except Quebec, for which data were available to 2010 and carried forward thereafter.

Note: Rates are age-standardized to the 2011 Canadian population.

Analysis by: Health Statistics Division, Statistics Canada
Data source: Canadian Cancer Registry database at Statistics Canada

Potential trends for cancers in general

FIGURE 4.4 Trends in new cases and deaths (in thousands) for all cancers and ages, attributed to changes in cancer risk and cancer control practices, population growth and aging population, Canada, 1984–2019



Number of cancer cases or deaths that would have occurred if the cancer risk, population size and age structure remained the same as they were in 1984.

Number of new cancer cases or cancer deaths that would have occurred if the population size and age distribution remained the same as they were in 1984.

Number of new cancer cases or cancer deaths that would have occurred if the age distribution remained the same as it was in 1984.

Actual number of new cases and deaths that occurred. Reflects impact of changes in cancer risk and cancer control practices, population growth and aging population.

Note: New cases exclude non-melanoma skin cancer (neoplasms, NOS; epithelial neoplasms, NOS; and basal and squamous). Actual incidence and mortality data were available to 2015 for all provinces and territories except for Quebec. For further details, see *Appendix II: Data sources and methods*. The range of scales differs between the graphs.

Analyses by: Centre for Surveillance and Applied Research, Public Health Agency of Canada

Data sources: Canadian Cancer Registry, National Cancer Incidence Reporting System and Canadian Vital Statistics Death Database at Statistics Canada

Canadian Cancer Statistics 2019

Prediction of elimination

FIGURE 4.5 Summary of key cancer control and outcome characteristics by cancer type

	Preventability	Detectability	Incidence	Survival	Mortality
Lung and bronchus					
Breast					
Colorectal					
Prostate					
Bladder					
Non-Hodgkin lymphoma					
Thyroid					
Melanoma					
Kidney and renal pelvis					
Uterus (body, NOS)					
Leukemia					
Pancreas					
Oral					
Stomach					
Multiple myeloma					
Brain/CNS					
Ovary					
Liver					
Esophagus					
Cervix					
Larynx					
Testis					
Hodgkin lymphoma					

CNS=central nervous system; NOS=not otherwise specified

Preventability — Relative ratings are assigned to each cancer site based primarily on the population attributable risk reported by Canadian Population Attributable Risk of Cancer (ComPARe) study. Green represents cancers for which it is estimated that at least 50% of cancers are preventable or for which screening programs can detect treatable precancerous lesions, yellow where 25%–49% are preventable and red where less than 25% are preventable. Where information was not available through ComPARe, Cancer Research UK was used.

Detectability — Relative ratings were assigned as green if organized screening programs are available in Canada, yellow if opportunistic early detection is available and red if no organized screening and limited early detection procedures are available.

Incidence — Relative ratings were assigned as green if there were less than 5,000 cases, yellow if there were less than 15,000 cases and red if there at least 15,000 cases in 2019 (Table 1.2).

Survival — Relative ratings are assigned based on predicted five-year net survival probabilities listed in Table 3.1. Red represents a survival of less than 50%, yellow represents 50%–79% and green represents 80% or more.

Mortality — Relative ratings were assigned as green if there were less than 1,000 deaths, yellow if there were 1,000–4,000 deaths and red if there were more than 4,000 deaths in 2019 (Table 2.2).

Canadian Cancer Statistics 2019

Webinar Learning Objectives:

- Discuss the WHO goal of the global elimination of cervical cancer by 2030
- Address cervical cancer elimination from a prevention perspective
- Describe current cervical cancer burden, challenges, and the projected increase in cervical cancer if changes are not implemented
- **Discuss the recently produced document entitled "Canada's Role in Accelerating Global Elimination of Cervical Cancer"**

The prospects on elimination and the main declaration from Canada

DOMESTIC OBJECTIVES

- Canada has its own pockets of inequity with regard to cervical cancer prevention.
- There are groups not reached by HPV immunization or cervical screening.
- In order to reach the objective of eliminating cervical cancer, we will need to develop innovative approaches with community leaders to bring the reality of cervical cancer elimination to those communities that experience higher rates of cervical cancer.
- Canada needs a comprehensive implementation plan to reach these communities.
- Canada also needs an infrastructure plan to make HPV testing available and accessible in all parts of the country.
- A committee should plan the deployment of a Canadian-specific infrastructure for HPV testing to accelerate the transition from cytology to HPV molecular testing.
- The Canadian Partnership Against Cancer could take the leadership in mediating this transition.

Canadian Network on HPV Prevention. (2019) Full document is available at the CIDC website: https://www.cidcgroup.org/s/cervical-cancer-elim-report_final.pdf

Conclusions and call to action

- Is administering the HPV vaccine the best preventive activity of your professional career?

Cervical cancer prevention: Are we delivering to those that need it the most?

- Are we sufficiently concerned about the situation for the most at-risk populations?
  - Vulnerable women: Indigenous, street-involved, injecting drug users, refugees and immigrants, immunocompromised and HIV+
  - Vulnerable men: MSM HIV- as well as HIV+ and other immunocompromised men…
- Is there a need for a federal plan?

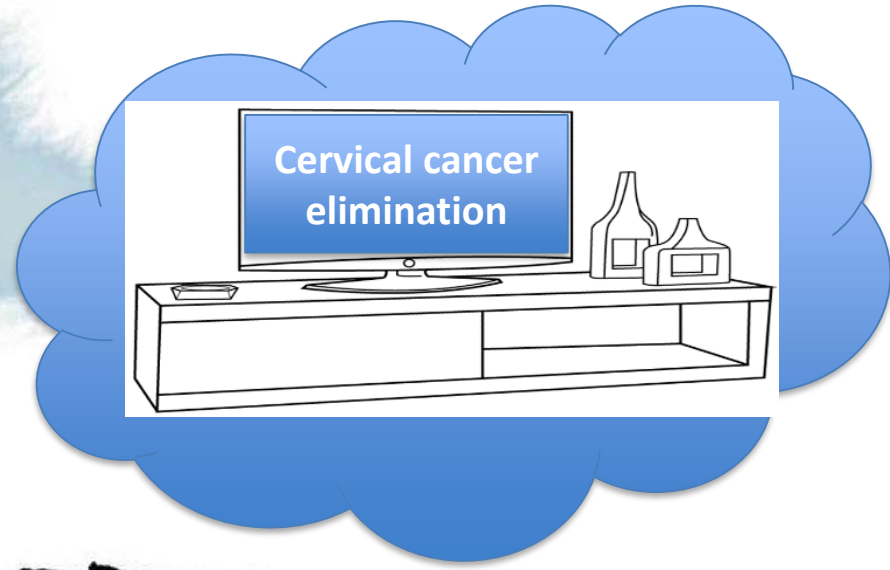
Laziness!

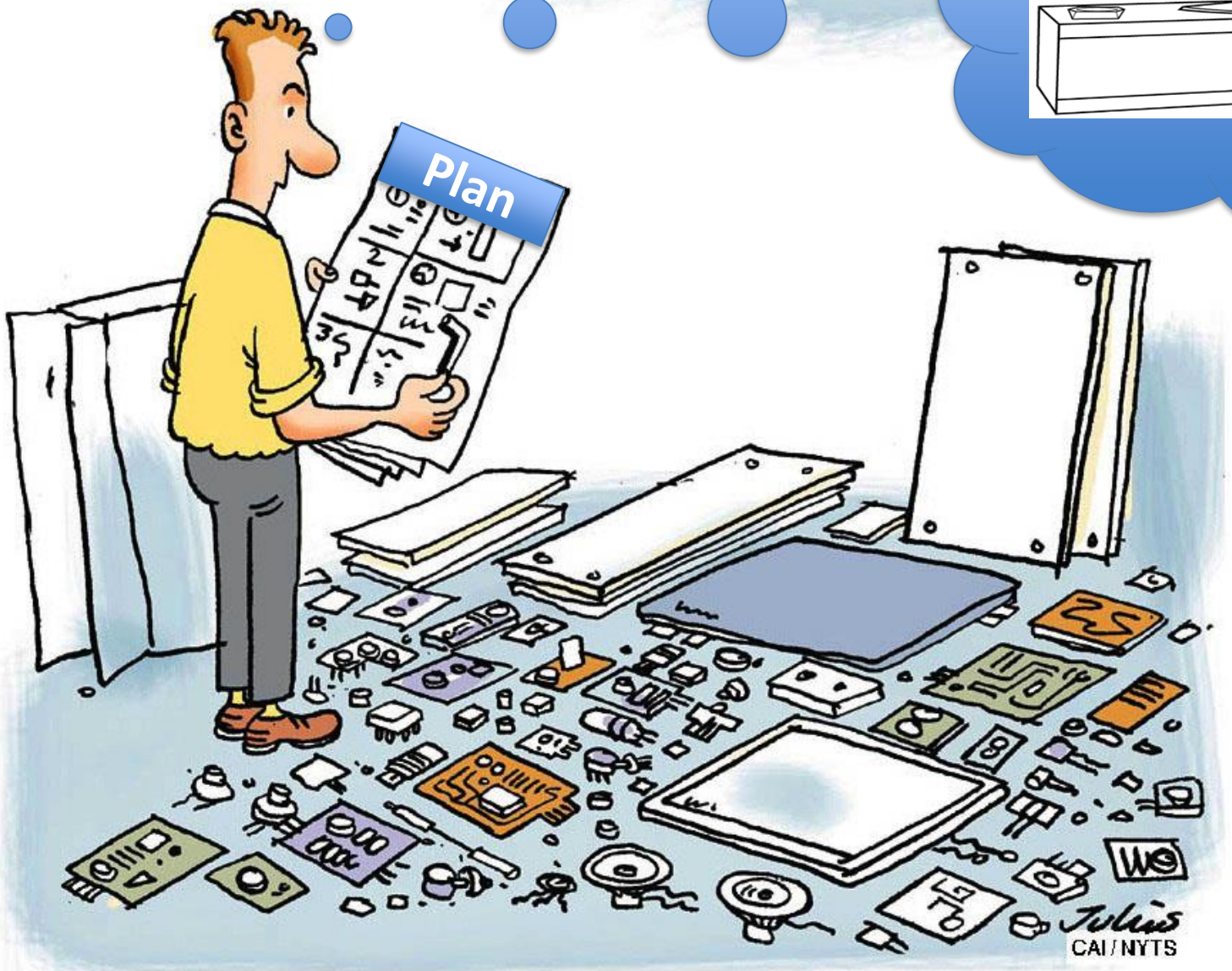
- We had sufficient successes to rest on our laurels!
- But
  - There are gaps in our successes
  - There are unreached populations
  - There are threats around the programs

HPV Prevention - key messages!

- HPV vaccine is effective for reducing morbidity from cervical cancer but is insufficient to eliminate cervical cancer screening.
- Cervical cancer screening reduces morbidity and mortality only from cervical cancer.
- The HPV vaccine is safe, efficient and recommended

From planning to reality now!



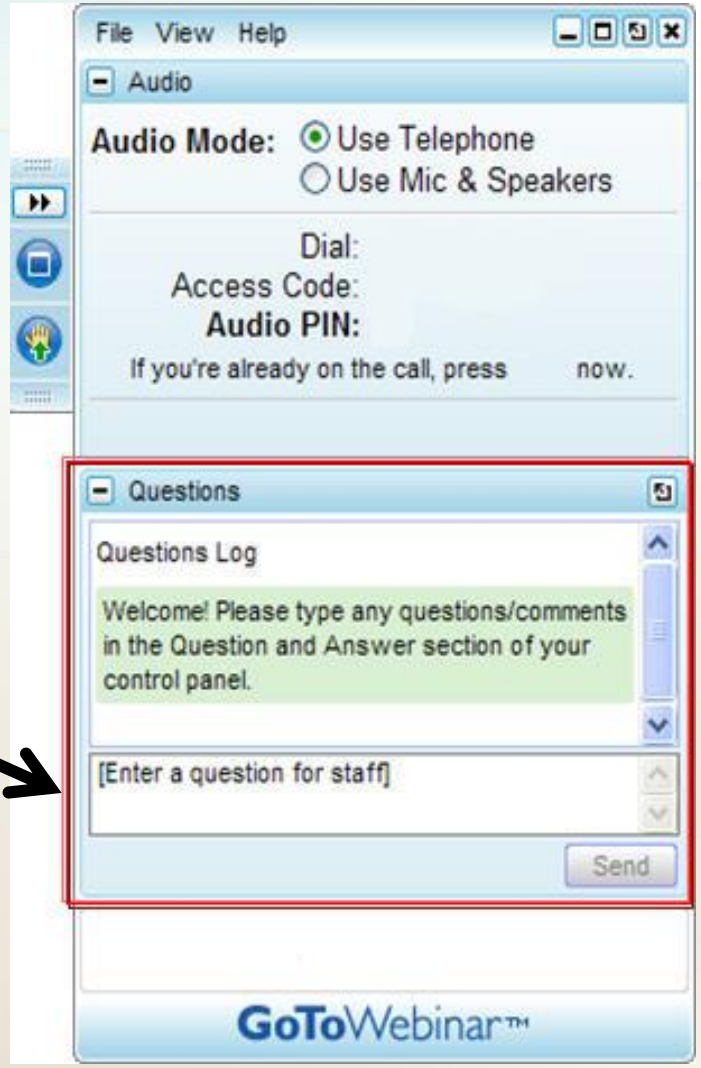


Thank you!

Canada is on a good path to cervical cancer elimination but we need all of you to be part of the action plan!

Question & Answer Period

Submit your text question using the Questions pane



Accelerating Cervical Cancer Elimination:
What you can do!

- **Evaluation:** https://www.surveymonkey.com/r/HL52WVY

- **Slide Set, Video recording, HPV documents at: www.CIDCgroup.org**
- Join the **Canadian HPV Prevention Network** at: **www.CIDCgroup.org**

(it's free! Fill out the 'Contact' form)

Please watch for an announcement about our January webinar

Thank you for participating!

More Info: George Wurtak, Executive Director, CIDC
GWurtak@CIDCgroup.org

This educational program is made possible through the support of **Merck Canada Inc**
and with assistance by BD Diagnostics and Immunize Canada