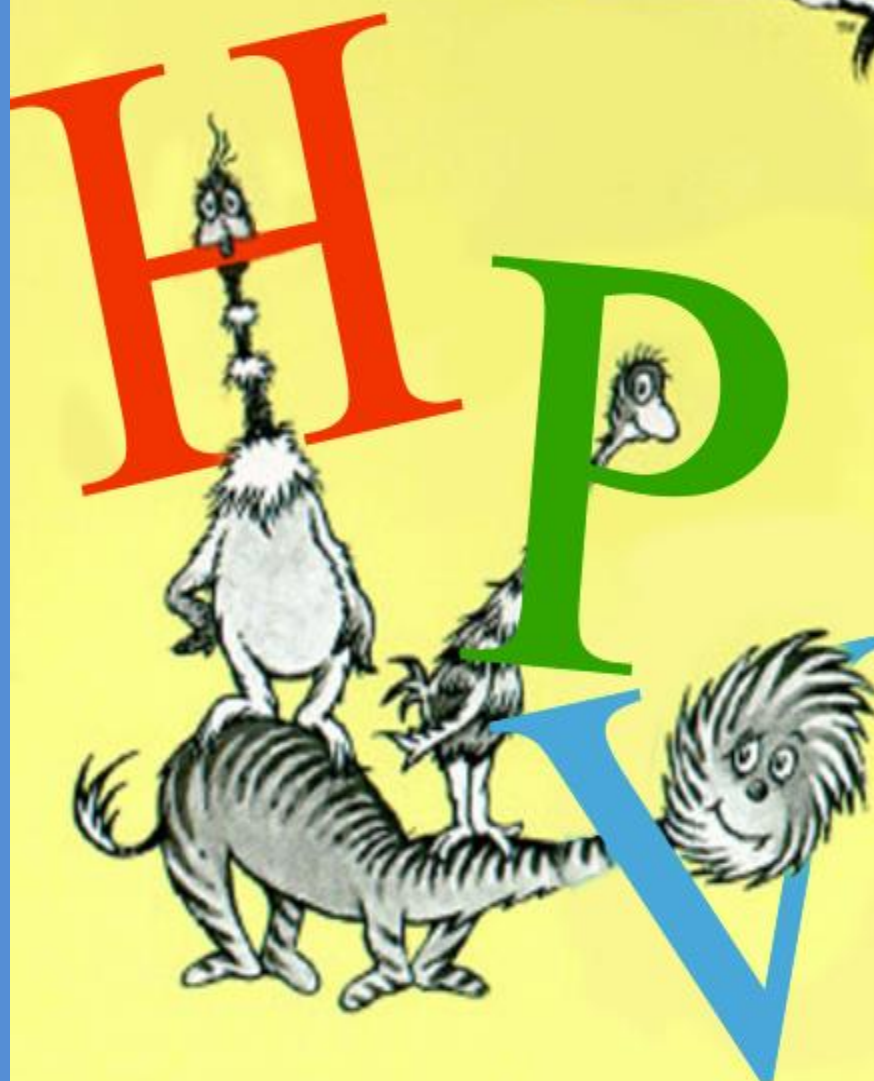


Dr. Seuss's

BRIGHT and EARLY  
Board Books



**“I've learned that people will forget what you said, people will forget what you did, but people will never forget how you made them feel.”**

*Maya Angelou*



- 1982 HPV/cervical cancer
- 2006 FDA approves vaccine (Cervarix & Gardasil)
- 2007 Australia starts HPV vaccination
- 2008 NZ starts HPV vaccination
- 2011 CDC recommended for boys
- 2013 Australia first to include boys
- 2014 Gardasil 9 approved
- 2014 2 dose schedule for <15yr
- 2017 NZ starts Gardasil 9

# Is the wonderful trial data materializing in the real world?

1. HPV prevalence
2. Genital Warts
3. High grade cervical lesions



# Population-level impact and herd effects following human papillomavirus vaccination programmes: a systematic review and meta-analysis



*Mélanie Drolet\*, Élodie Bénard, Marie-Claude Boily, Hammad Ali, Louise Baandrup, Heidi Bauer, Simon Beddows, Jacques Brisson, Julia M L Brotherton, Teresa Cummings, Basil Donovan, Christopher K Fairley, Elaine W Flagg, Anne M Johnson, Jessica A Kahn, Kimberley Kavanagh, Susanne K Kjaer, Erich V Kliewer, Philippe Lemieux-Mellouki, Lauri Markowitz, Aminata Mboup, David Mesher, Linda Niccolai, Jeannie Oliphant, Kevin G Pollock, Kate Soldan, Pam Sonnenberg, Sepehr N Tabrizi, Clare Tanton, Marc Brisson\**

www.thelancet.com/infection Published online March 3, 2015 [http://dx.doi.org/10.1016/S1473-3099\(14\)71073-4](http://dx.doi.org/10.1016/S1473-3099(14)71073-4)

## Impact and Effectiveness of the Quadrivalent Human Papillomavirus Vaccine: A Systematic Review of 10 Years of Real-world Experience

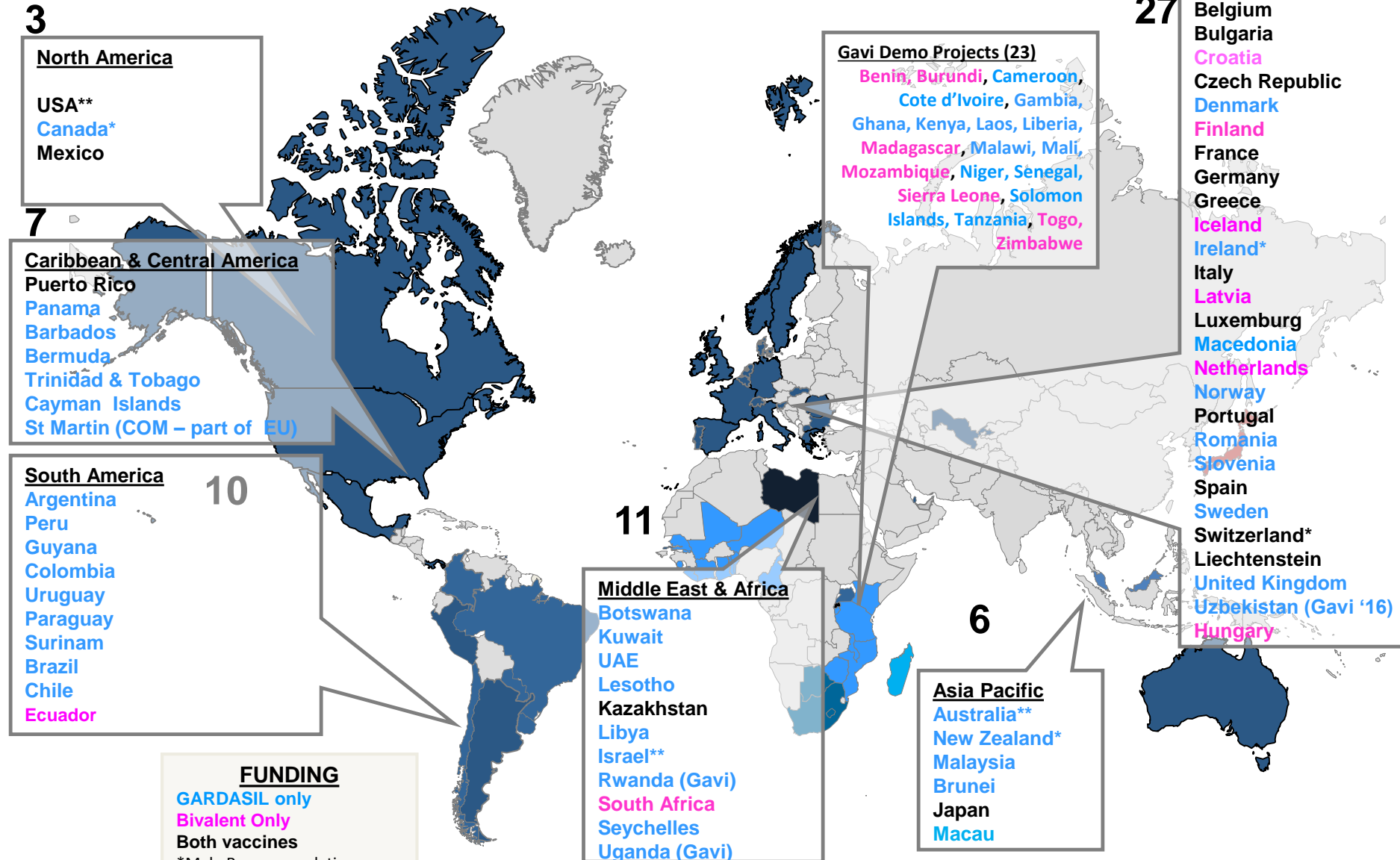
Suzanne M. Garland,<sup>1</sup> Susanne K. Kjaer,<sup>2</sup> Nubia Muñoz,<sup>3</sup> Stan L. Block,<sup>4</sup> Darron R. Brown,<sup>5</sup> Mark J. DiNubile,<sup>6</sup> Brianna R. Lindsay,<sup>6</sup> Barbara J. Kuter,<sup>6</sup> Gonzalo Perez,<sup>6,7</sup> Geraldine Dominiak-Felden,<sup>8</sup> Alfred J. Saah,<sup>6</sup> Rosybel Drury,<sup>8</sup> Rituparna Das,<sup>6</sup> and Christine Velicer<sup>6</sup>

**Clinical Infectious Diseases Advance Access published June 14, 2016**



# Government funded HPV National Immunization Programs: 65

- Female only program: 61 Countries; Gender-neutral: 4 countries



Last update: Sept 4, 2015

# 9 Countries have the end-points

	Genital Warts	HPV prevalence	Cervical
Australia	10	3	5
USA	4	9	4
Denmark	5		1
Sweden	3	1	1
Canada	1		3
New Zealand	2		
Belgium	1	1	
Germany	1	1	
France	1		

Numbers of papers published. As at 29/2/2016 Suzanne Garland et al Impact and Effectiveness of the Quadrivalent HPV vaccine: A systematic Review of 10 years of real world experience. CID June 14 2016

# 2011 – 18mths after vaccine - 63% decline

**THE NEW ZEALAND  
MEDICAL JOURNAL**  
Journal of the New Zealand Medical Association



## **Impact of the human papillomavirus (HPV) vaccine on genital wart diagnoses at Auckland Sexual Health Services**

Jeannie Oliphant, Nicky Perkins

NZMJ 29 July 2011, Vol 124 No 1339; ISSN 1175 8716  
URL: <http://www.nzma.org.nz/journal/124-1339/4788/>



2013 – 5 years after vaccine- 83% decline

**Trends in genital warts  
diagnoses in New Zealand  
five years following the  
quadrivalent human  
papillomavirus vaccine  
introduction**

Jeannie Oliphant, Joanna Stewart, Peter Saxton, Min Lo, Nicky Perkins,  
Daniel Ward

NZMJ 24 March 2017, Vol 130 No 1452  
ISSN 1175-8716 © NZMA  
[www.nzma.org.nz/journal](http://www.nzma.org.nz/journal)

# 10 years on - Impact on Cervical Lesions

Consistent across Australia, Sweden, Denmark, US and Canada

Age related benefit

Impact higher for women <17 at time of vaccination

- ~45% decrease in low grade
- ~80% decrease in high grade

Less effect if aged 20-29 at time of vaccination

- 25%

Garland et al. Impact and effectiveness of the quadrivalent HPV vaccine: a systematic review of 10 years of real-world experience. CID June 2016

N ENGL J MED 372;8 NEJM.ORG FEBRUARY 19, 2015

*The NEW ENGLAND JOURNAL of MEDICINE*

ORIGINAL ARTICLE

# A 9-Valent HPV Vaccine against Infection and Intraepithelial Neoplasia in Women

E.A. Joura, A.R. Giuliano, O.-E. Iversen, C. Bouchard, C. Mao, J. Mehlsen, E.D. Moreira, Jr., Y. Ngan, L.K. Petersen, E. Lazcano-Ponce, P. Pitisuttithum, J.A. Restrepo, G. Stuart, L. Woelber, Y.C. Yang, J. Cuzick, S.M. Garland, W. Huh, S.K. Kjaer, O.M. Bautista, I.S.F. Chan, J. Chen, R. Gesser, E. Moeller, M. Ritter, S. Vuocolo, and A. Luxembourg, for the Broad Spectrum HPV Vaccine Study\*



# Gardasil<sup>®</sup> 9

6, 11, 16, 18, **31, 33, 45, 52, 58**

# Gardasil 9 is for women

Journa EA et al. N Engl J Med 2015;372:711-723.

Lesion Type	4vHPV vaccine		9vHPV vaccine
Cervical Cancer	70%		90%
AIS	95%		>95%
CIN 2/3	50%		75-85%
CIN 1	30-35%		50-60%
Vulval cancer	70-75%		85-90%
VIN 2/3	80-85%		90-95%
Vaginal cancer	65%		80-85%
VaIN 2/3	60-65%		75-85%
Anal cancer	85-90%		90- 100%
AIN 2/3	80-85%		85-90%
Penile cancer	75-85%		85%
PIN 2/3	80%		90%

# Gardasil 9 International Registration

Country	First approved	Funded	Boys	2 dose 9-14
<b>USA</b>	10 Dec 2014	Yes	Yes	Yes
<b>Canada</b>	5 February 2015	Yes	No, MSM only	No
<b>EU</b>	10 June 2015	Yes	Only in Austria	Only in Austria
<b>UK</b>	10 June 2015	Yes	No	No
<b>Australia</b>	22 June 2015	<b>NO</b>	<b>NO</b>	<b>NO</b>
<b>New Zealand</b>	18 February 2016	<b>YES 😊</b>	<b>YES 😊</b>	<b>YES 😊</b>





9 valent HPV vaccine  
Boys and Girls  
9-14 : 2 dose  
15-26 : 3 dose



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Funded indications  
and recommended  
schedules

2 doses, at 0 and 6–12 months for children aged 14 years and under.

3 doses, at 0, 2 and 6 months, for individuals:

- aged 15–26 years inclusive
- aged 9–26 years inclusive:
  - with confirmed HIV infection
  - who are transplant (including stem cell) patients.

An additional dose for individuals aged 9–26 years post-chemotherapy.

Individuals who started with HPV4 may complete their remaining doses with HPV4 or with HPV9 when available.

Individuals who were previously fully vaccinated with HPV4 are not eligible for HPV9.

# NZ roll out of Gardasil 9

All schools have been given G9 from Jan 2017

Consent forms (ADHB) 83% girls 80% boys

GP stocks of Gardasil 4 finished in March 2017

Universities have targeted international students

NCSP smear test and recall letters now include “discuss HPV vaccination with your doctor”

## Gardasil9 - distribution

<b>ProPharma Branch</b>	<b>Jan17</b>	<b>Feb17</b>	<b>Mar17</b>	<b>Apr17</b>	<b>Total</b>
Whangarei	0	80	800	620	1,500
Auckland	0	600	7,980	5,860	14,440
Hamilton	0	2,410	4,740	1,520	8,670
Wellington	330	740	5,090	3,610	9,770
Christchurch	0	680	3,920	2,060	6,660
Dunedin	0	770	1,190	830	2,790
<b>Total</b>	<b>330</b>	<b>5,280</b>	<b>23,720</b>	<b>14,500</b>	<b>43,830</b>

# 1 dose ?

- Costa rica vaccine trial (bivalent)
- Patricia trial (bivalent)
- More research required but looks promising





Vaccination for the already exposed-  
a large and motivated market



# Intention to Treat groups

Study	Age	PP group	ITT group
Quadrivalent <sup>1</sup>	15 - 26	100%	44%
Quadrivalent <sup>2</sup>	24 - 45	>90%	30%
9 valent <sup>3</sup>	9 - 26	>90%	20%
Bivalent <sup>4</sup> Viviane Study	> 26	>90%	23%

1 Future 11 Study NEJM 2007 356(19): 1915

2 Castellsaque et al. End of study safety, immunogenicity and efficacy of quadrivalent HPV recombinant vaccine in adult women 24-45 years of age. Br J Cancer 2011 105(1):28

3 Joura EA et al. N Engl J Med 2015;372:711-723

4 Wheeler. Efficacy safety and immunogenicity of HPV 16/18 AS04 adjuvated vaccine in women older than 25 years- 7 year followup of the phase 3 double blind randomised controlled Viviane study. Lancet Infect Dis 2016 16:1154

# Tailor decision to individual circumstances

- At age 40, even if you acquire new HPV, likelihood of getting cancer is going to be very small
- Vaccine is simply more effective with younger age, in both HPV naïve and HPV exposed adults
  - Better immunogenicity
  - Overall less HPV

# What is HPV

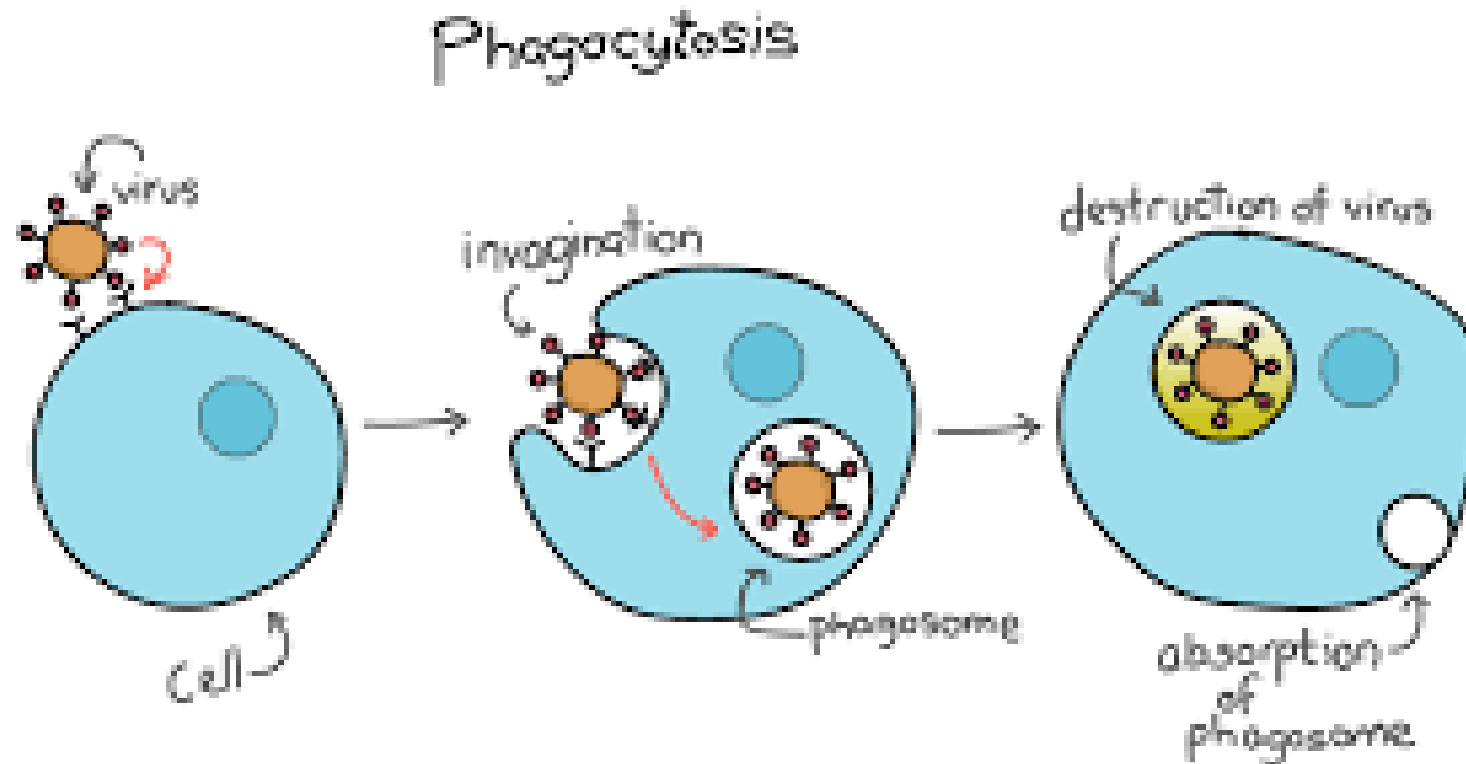
HPV is so common that nearly all sexually-active men and women will get at least one type of HPV at some point in their lives.



# What kind of sex



# Does natural infection provide immunity





# Will I have this forever



# Can I re-catch the same HPV



# Does latency and reactivation occur



# Has my partner been sleeping around



# How do I know if this is a new infection



# Can I have a test

- Can my partner have a test
- I want to know which type it is
- I want to know if its gone





- ▶ What are the take home messages for
- ▶ Anal HPV
- ▶ Oropharyngeal HPV

Is the vaccine useful if I'm already sexually active



**That's it!**

