HPV Infection and Newer Vaccines: An Update
Dr. S. Tsiodras, University of Athens Medical School, Greece
A Webber Training Teleclass

HPV Infection and Newer Vaccines: An Update

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Hosted by Paul Webber
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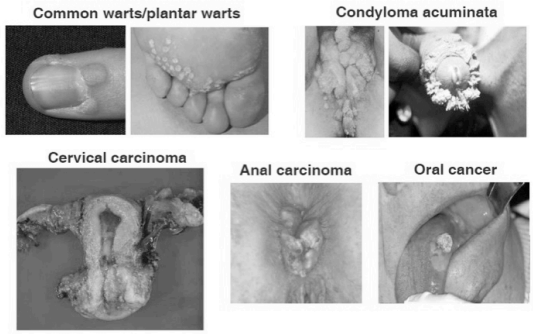
www.webbertraining.com April 15, 2010

HPV-associated diseases



Cancers Attributable to High-Risk HPV

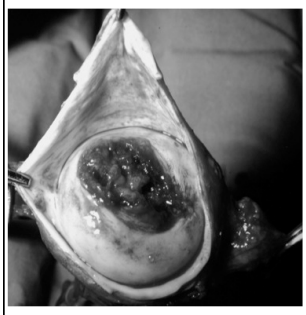
Cancer Site	Total Cancers*	% Associated With HPV**
Cervical	12,085	≥95%
Vaginal/Vulvar	3,703	50%
Penile	4,480	>50%
Anal	985	>70%
Oral/Pharyngeal	10,088	20%

*U.S. Cancer Incidence Cancer Statistics: 1999-2000. Atlanta: Department of Health and Human Services, Centers for Disease Control and Prevention, and the National Cancer Institute. Available at: www.cdc.gov/cancer/npcr/uscs/. Accessed Aug. 16, 2006.
**Gonzalez Intxaurraga MA, et al. *Acta Dermatovenerol*. 2002;11:1–8.

Figure: Age-standardised mortality rate from cervical cancer per 100 000 women

www.thelancet.com Vol 374 December 12, 2009

In Greece, every year...



580 new cases
240 deaths

from cervical Cancer

Age-standardised rated of incidence of and mortality from cervical cancer (/100,000 women-years) in the 27 member states of the European Union, ranked by increasing mortality, estimates for 2004 (direct standardisation using the World reference population), (derived from Arbyn *et al.*, *Ann Oncol* 2007b).

Human papilloma virus Transmission

- Sexual
  - main
  - subclincial infection of the partner
- Incubation period
  - weeks to several months

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Cervical Ca - HPV Prevention

- ? Condoms
  - – Meta-analysis - 20 studies
    - protection of approx. 70%
    - NOT complete

Manhart LE, Koutsky LA. Sex Trans Dis 2002

N Engl J Med. 2006;354:2645–2654.

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Male Circumcision for the Prevention of HSV-2 and HPV Infections and Syphilis

Aaron A.R. Tobian, M.D., Ph.D., David Serwadda, M.Med., M.P.H., Thomas C. Quinn, M.D., M.Sc., Godfrey Kigozi, M.B., Ch.B., M.P.H., Patti E. Gravitt, Ph.D., Oliver Laeyendecker, M.S., M.B.A., Blake Charvat, M.Sc.,* Victor Ssempijja, B.Stat., Melissa Riedesel, M.P.H., Amy E. Oliver, B.A., Rebecca G. Nowak, M.P.H., Lawrence H. Moulton, Ph.D., Michael Z. Chen, M.Sc., Steven J. Reynolds, M.D., M.P.H., Maria J. Wawer, M.D., M.H.Sc., and Ronald H. Gray, M.D., M.Sc.

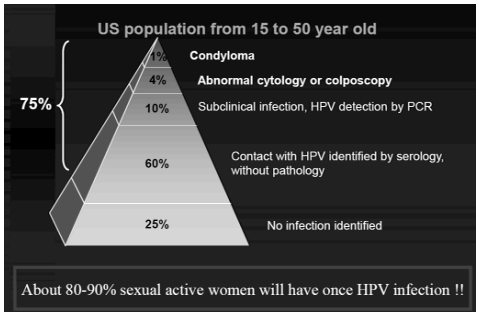
ORIGINAL ARTICLE
Volume 360:1298-1309 March 26, 2009 Number 13

Table 3. Male Circumcision and the Prevalence of Human Papillomavirus (HPV) Infection.*

HPV Genotype	HPV-Positive		Risk Ratio (95% CI)
	Intervention Group	Control Group	
	no./total no. (%)		
All genotypes			
At baseline	190/307 (61.9)	189/302 (62.6)	0.99 (0.81–1.21)
At 24 mo	83/233 (35.6)	147/287 (51.2)	0.70 (0.53–0.91)
Low-risk genotypes			
At baseline	146/307 (47.6)	145/302 (48.0)	0.99 (0.79–1.25)
At 24 mo	61/233 (26.2)	113/287 (39.4)	0.66 (0.49–0.91)
High-risk genotypes			
At baseline	117/307 (38.1)	112/302 (37.1)	1.03 (0.79–1.33)
At 24 mo	42/233 (18.0)	80/287 (27.9)	0.65 (0.45–0.94)

ORIGINAL ARTICLE
Volume 360:1298-1309 March 26, 2009 Number 13

Who is at risk ?



1. Baseman JG *et al. J Clin Virol* 2005; 32 Suppl 1: S16–24; 2. Ho GY *et al. N Engl J Med* 1998; 338: 423–8; 3. Brown DR *et al. J Infect Dis* 2005; 191: 182–92; 4. Human Papillomavirus: HPV Information for Clinicians. CDC 2006;

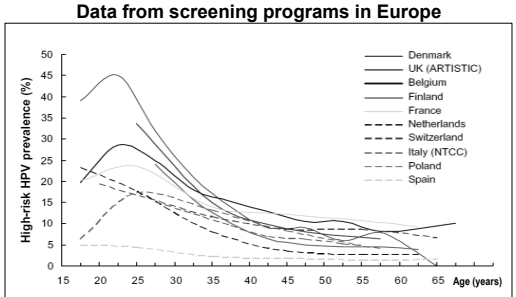
Human papilloma virus Anogenital infection

- Epidemiology USA
  - NHANES study – HPV prevalence
    - –vaginal swab 1921 women
      - 27 % (+)
      - 45% in women aged 20-24 yrs

JAMA 2007; 297:813

12

Prevalence of high risk HPV genotypes in cervical samples
Data from screening programs in Europe

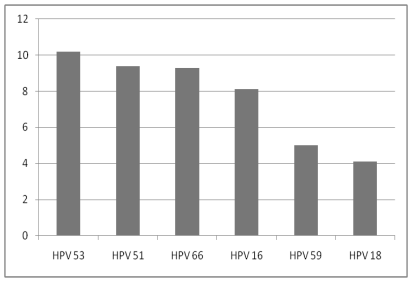


In most European countries, exposure to oncogenic HPV types occurs in women aged 15-44 yrs

1. De Vuyst H et al. *Eur J Cancer* 2009; 45:2632-2639

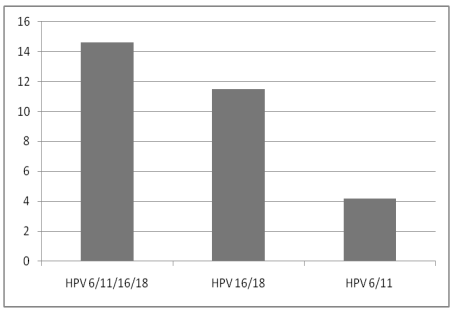
HPV prevalence by DNA method 3404 women (42.2±13.3 yrs)-

- 49% (95% CI: 47%-50.9%)



Tsiodras et al IDSA 2009

HPV 6, 11, 16 & 18 (+) ARRAYS



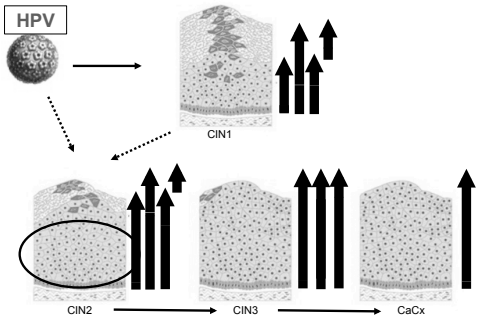
Tsiodras et al IDSA 2009

HPV (+) – associations

- younger age p<0.001
- younger age of sexual debut p<0.001
- current and total n of sexual partners p<0.001
- short duration of a sexual relationship p<0.001
- marriage / multiparity = protection p<0.001

Tsiodras et al IDSA 2009

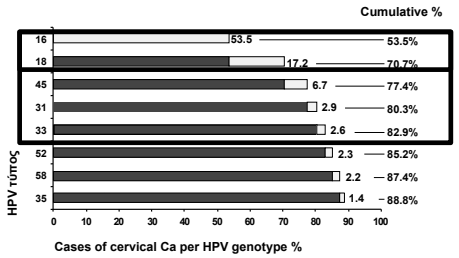
HPV gene expression in persistence and disease progression



Doorbar J. *Clin Sci (Lond)* 2006; **110**:525–541.

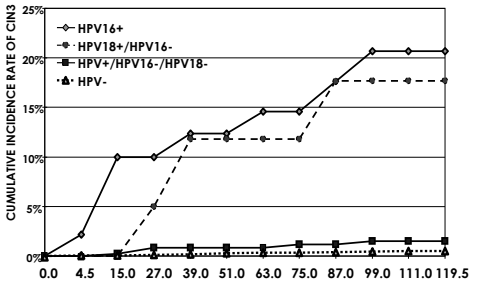
Vaccination

HPV types in cervical cancer worldwide

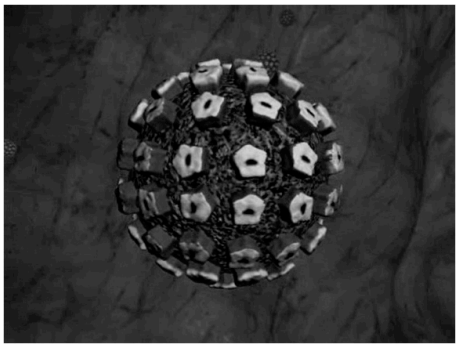


Muñoz N, *et al. Int J Cancer* 2004; 111:278–285.

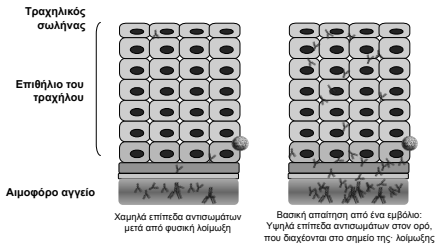
Cumulative incidence of CIN3+ lesions during a 10 yr f/u
1 HPV test result available at onset of f/u
KAISER PERMANENTE data



KHAN MJ ET AL. J NATL CANCER INST 2005;97(14):1072-9



High levels of neutralizing antibodies in the cervix, associated with protection from HPV infection



1. Stanley M *et al. Vaccine* 2006;24 Suppl 3:S106–S113;
2. Poncelet S *et al. 24th International Papillomavirus Conference* 2007;Abstract PS19-25.

The 2 vaccines

- Gardasil

- Cervarix

Comparisons

	Quadrivalent (Merck)	Bivalent (GSK)
Licensed in US	2006	2009
VLP types	HPV 6/11/16/18	HPV 16/18
Adjuvant	Alum	AS04
Licensed for use in	Males and females	females

HPV - Vaccines

- 1st approval from FDA 2006
  - MERCK
    - Ages 9-26
    - Cost
      - $ 360
- GSK
  - approval EMEA 2007, FDA 2009

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HPV Vaccine Efficacy
Vaccine HPV Type CIN2+
According to Protocol or Per Protocol

Vaccine/ HPV type	Vaccine N	cases	Placebo N	cases	Vaccine Efficacy %	(CI)
Bivalent*						
HPV 16/18	7344	4	7312	56	**93%**	(80, 98)
HPV 16	6303	2	6165	46	**96%**	(83,100)
HPV 18	6794	2	6746	15	**87%**	(40, 99)
Quadrivalent**						
HPV 16/18	7738	2	7714	100	**98%**	(93,100)
HPV 16	6647	2	6455	81	**98%**	(91,100)
HPV 18	7382	0	7316	29	**100%**	(87,100)

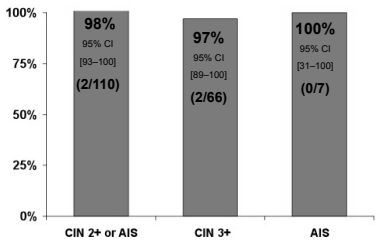
*According to protocol population: received all three doses, cases counted day one after dose 3, normal or low grade cytology at baseline; mean follow-up: 2.9 yrs. 96.1% CIs

**Per protocol population: received all three doses, cases counted day one after dose 3; mean follow-up: 3.5 yrs; 95% CIs

CIN2+: cervical intraepithelial neoplasia grade 2 or higher or adenocarcinoma in situ

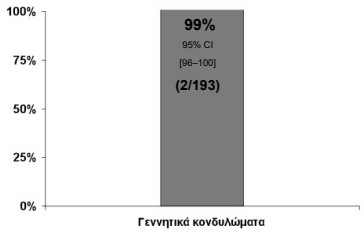
Paavonen et al. Lancet 2009; Kjaer et al. Cancer Prev Res 2009

Gardasil efficacy and high grade lesions due to HPV 6/11/16/18
combined data 3 phase II/III studies – ATP analysis



Kjaer S et al. *Cancer Prev Res* 2009;2:868-878

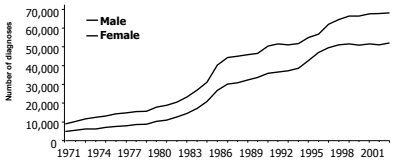
Gardasil efficacy and GENITAL WARTS
combined data 3 phase II/III studies – ATP analysis



Gardasil®, Summary of product characteristics, Sept 2009
Lacey C et al. Poster presented at EBCOG 2008, Lisbon, Portugal

Genital warts

Number of Diagnoses STD Clinics in England and Wales[1]
(first, recurrent & re-registered episodes)



Μεγάλη Βρετανία 2007[2]

1st lesion	89 800
Recurrence	49 800

Number of new STI episodes seen at genitourinary medicine clinics

1. Health Protection Agency, 2005
2. http://www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1215589015024

THE LANCET

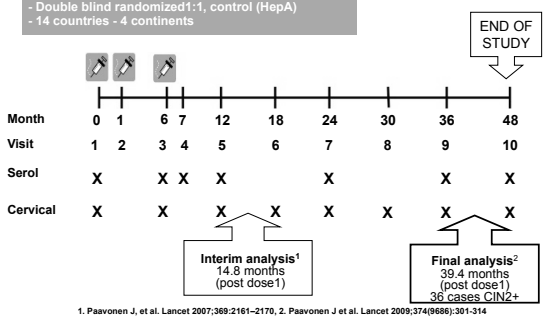
Efficacy of human papillomavirus (HPV)-16/18 AS04-adjuvanted vaccine against cervical infection and precancer caused by oncogenic HPV types (PATRICIA): final analysis of a double-blind, randomised study in young women

J Paavonen, P Naud, J Salmerón, C M Wheeler, S-N Chow, D Apter, H Kitchener, X Castellsague, J C Teixeira, S R Skinner, J Hedrick, U Jaisamrarn, G Limson, S Garland, A Szarewski, B Romanowski, F Y Aoki, T F Schwarz, W A J Poppe, F X Bosch, D Jenkins, K Hardt, T Zahaf, D Descamps, F Struyf, M Lehtinen, G Dubin, for the HPV PATRICIA Study Group

Interpretation The HPV-16/18 AS04-adjuvanted vaccine showed high efficacy against CIN2+ associated with HPV-16/18 and non-vaccine oncogenic HPV types and substantial overall effect in cohorts that are relevant to universal mass vaccination and catch-up programmes.

Patricia design

- 18,644 women 15-25 yrs (TVC)
- Double blind randomized1:1, control (HepA)
- 14 countries - 4 continents



1. Paavonen J, et al. Lancet 2007;369:2161–2170, 2. Paavonen J et al. Lancet 2009;374(9686):301-314

Efficacy against CIN2+*
Due to HVP-16/18

Population		n	Efficacy %	Efficacy 96.1% CI	Efficacy p
Totla	Cervarix	2	98	91-100	<0.0001
	Control	87			
Total - naive	Cervarix	1	98	90-100	<0.0001
	Control	63			
ATP	Cervarix	1	98	88-100	<0.0001
	Control	53			

* CIN2+ = CIN2, CIN3, AIS, διηθητικός καρκίνος

Paavonen et al., Lancet, 2009;374(9686):301-14

Total efficacy against CIN2+ & CIN3+
Independent of HPV genotype (total naïve population)

	End point	Efficacy %	Efficacy 95 % CI	Efficacy P
CIN2+ up to 50 %[1]	CIN2+	70.2	54.7-80.9	<0.0001
CIN3+ up to 70 %[2]	CIN3+	87.0	54.9-97.7	<0.0001

1. Smith J S et al. Int J Cancer 2007; 121: 621-632;
2. http://www.who.int/hpvcentre/statistics (cervical cancer data)
3. Paavonen et al., Lancet, 2009;374(9686):301-14

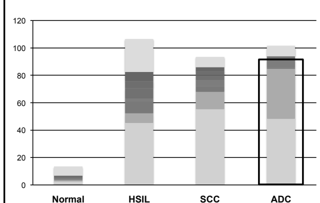
Efficacy against CIN2+ from HPV 31, 33, 45

HPV genotype		n	Efficacy %	Efficacy 96.1% CI
Total naïve πληθυσμός[1]				
HPV-31	Cervarix	0	100	78-100
	Control	20		
HPV-33	Cervarix	5	72	19-93
	Control	18		
HPV-45	Cervarix	0	100	-19.5-100
	Control	5		
ATP [2]				
HPV-31	Cervarix	2	92	66-99
	Control	25		
HPV-33	Cervarix	12	52	-3-80
	Control	25		
HPV-45	Cervarix	0	100	-68-100
	Control	4		

Paavonen et al., Lancet, 2009;374(9686):301-14

HPV-45 is associated with cervical AdenoCa

HPV-18 & -45 associated lesions are more likely to pprogress to invasive adenoCa than other oncogenic genotypes



Τύπος	κ.φ.	HSIL	SCC	ADC
16	2.6	45.3	55.2	48.4
18	0.9	6.9	12.8	36.3
45	0.4	2.3	4.6	5.8
31	**0.6**	**8.6**	**3.8**	**0.7**
33	0.5	7.3	3.7	2.0
52	0.9	5.1	2.9	0
58	0.9	7.0	2.8	0.7
Άλλοι	6.8	23.9	7.6	7.7

Global prevalence of HPV genotypes according to cervical lesion

Προσαρμογή από Bosch FX, *et al. Vaccine* 2008; 26S:K1-K16.

GARDASIL®: CIN 2/3 prevention from NON-Vaccine HPV-types
FUTURE I and II (Protocols 013 and 015) END OF STUDY
RMITT-2 Population* Women 16 – 26 years

CIN2/3 or AIS	Cases Gardasil® Group	Cases Placebo Group	Efficacy	95% CI
10 non-vaccine oncogenic HPV types 31, 33, 35, 39, 45, 51, 52, 56, 58, 59 (Gardasil® N = 8,461 - Placebo N = 8,508)	62	93	33%	6, 52
HPV 31 (Gardasil® N = 8,427 - Placebo N = 8,468)	8	27	70%	32, 88

*RMITT-2 population: generally HPV naïve population, i.e. Sero and PCR negative to all 4 vaccine types plus PCR negative to 10 additional HPV types, received at least one dose, case count starts one month post dose 1

Brown DR, et al. J Infect Dis 2009;199:926-35.

Quadrivalent against oncogenic other than16/18

	HPV 45	HPV 31	HPV 33	HPV 52	HPV 58
Incident Infection	-	-	-	-	-
Persistent Infection (6m)	-	-	-	-	-
Persistent Infection (12m)	-	-	-	-	-
CIN 2/3+	- 0,00% (not significant) P/V: 11/11 events	- 55.6% (95% CI:26-74) P/V: 52/23 events	- 19.1% (not significant) P/V: 36/29 events	- 14.7% (not significant) P/V: 52/44 events	- 31.5% (not significant) P/V: 35/24 events

Gardasil SPC, 15 Sept 2008

Immunogenicity study "Head to Head"

- **Population:** healthy women 18-45 yrs (N=1042) - 3 age groups
- USA
- **Design:** Randomized (1:1), double blind study of Safety / Immunogenicity in 2 groups:
  - Cervarix™ (N=521)
  - Gardasil® (N=521)
- **Duration:** 7 months, follow-up until month 24
- **Vaccination scheme:**

Vaccine	Month 0	Month 1	Month 2	Month 6
Cervarix®	Cervarix®	Cervarix®	Placebo ($AL(OH)_3$)	Cervarix®
Gardasil®	Gardasil®	Placebo ($Al(OH)_3$)	Gardasil®	Gardasil®

Einstein MH, Baron M, Levin MJ, et al.. *Human Vaccine 2009; 5(10)*

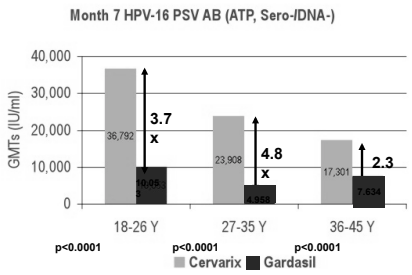
Measuring antibody response

Pseudovirion-based neutralization assay (PBNA)

- **NCI developed method**
- **Recommended by WHO**
- **Measures «biologically significant response»**
- **Pseudovirions are neutral**
  - **Plasmid developed in human cells**

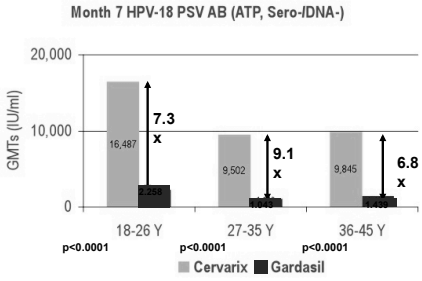
Einstein MH, Baron M, Levin MJ, et al.. *Human Vaccine 2009; 5(10)*

Neutralizing Ab against HPV-16



Einstein MH, Baron M, Levin MJ, et al.. *Human Vaccine 2009; 5(10)*

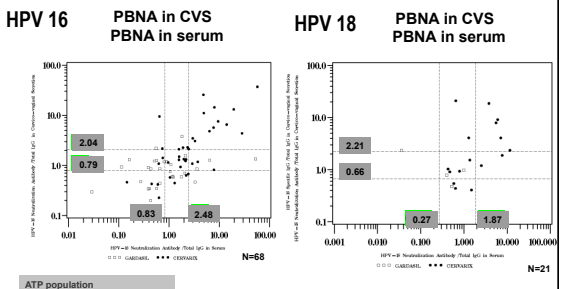
Neutralizing Ab against HPV-18



Einstein MH, Baron M, Levin MJ, et al.. *Human Vaccine 2009; 5(10)*

Correlation - HPV Ab in cervical secretions & serum Ab

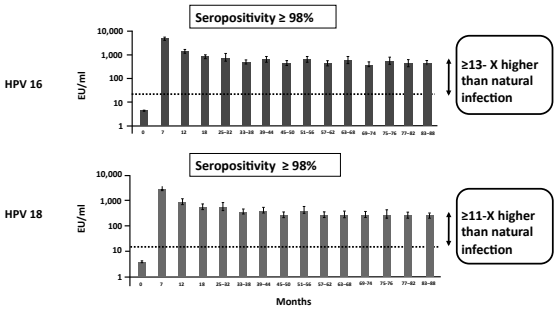
Women 18-45 yrs old



ATP population

Einstein MH, Baron M, Levin MJ, et al.. *Human Vaccine 2009; 5(10)*

High AB levels up to 7,3 yrs – Bivalent vaccine



Adapted from De Carvalho, N *et al.*
25th International Papillomavirus Conference (Abstract P-29.15), 2009.

Post-Vaccination Issues

- Anaphylaxis
  - Some data suggests increased rates of anaphylaxis with HPV compared to Meningococcal vaccine (Australia)- 2.6 vs. 0.1/100,000
    - Brotherton M, et.al. Anaphylaxis following quadrivalent human papillomavirus vaccination, CMAJ. 2008 Sep 9;179(6):525-33. Epub 2008 Sep 1.
  - Need to consider data in United States (26 reports to VAERS 2007-08/ 13 million doses)
    - Hasley NA. The human papillomavirus vaccine and risk of anaphylaxis. CMAJ. 2008 Sep 9;179(6):509-10. Epub 2008 Sep 1
  - Algorithm for Clinical Management
    - Wood RA, Berger M, Dreskin SC, et al. An Algorithm for Management of Patients with Hypersensitivity Reactions Following Vaccines. *Pediatrics*.2008 Sep;122(3):e771-7
- Syncope
  - HPV vaccine associated with increased rates of fainting
    - Centers for Disease Control and Prevention. Syncope After Vaccination — United States, January 2005–July 2007. *MMWRMorb Mortal Wkly Rep* 2008;57:457-60.
  - Observe adolescents (sitting) for 15 minutes
    - Kroger AT, Atkinson WL, Marcuse EK, et al.; Advisory Committee on Immunization Practices Centers for Disease Control and Prevention (CDC). General recommendations on immunization: recommendations of the Advisory Committee on Immunization Practices. *MMWR Recomm Rep* 2006;55(RR-15):1-48.

Safety data

TVC population	HPV N = 9319 (100%)		HAV N = 9325 (100%)	
endpoint	n	%	n	%
Medically important AE	2960	31.8	3025	32.4
Serious AE	701	7.5	699	7.5
Serious associated AE	11	0.1	6	0.1
New cases of chronic dz	251	2.7	268	2.9
New cases of autoimmune dz	78	0.8	77	0.8

Paavonen et al., Lancet, 2009;374(9686):301-14

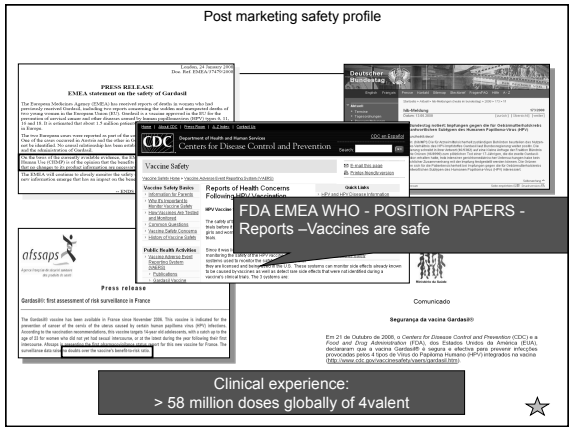
SAFETY

- *Cervarix*® > *Gardasil*®
  - Local reactions at injection site
- Compliance of 3 dose vacciantion scheme similar between 2 groups :
- ≥84% completed vaccination

Einstein MH, Baron M, Levin MJ, et al.. *Human Vaccine 2009; 5(10)*

Pregnancies – outcome

TVC	Τελική ανάλυση			
	HPV N = 1804 (100%)		HAV N = 1802 (100%)	
Category	n	%	n	%
Normal infant	1124	62.3	1136	63.0
No outcome	204	11.3	212	11.8
Infant AE	21	1.2	19	1.1
Pregnancy termination	185	10.3	194	10.8
Spontaneous abortion	164	9.1	156	8.7



Efficacy in older women (24 – 45 yrs)

Safety, immunogenicity, and efficacy of quadrivalent human papillomavirus (types 6, 11, 16, 18) recombinant vaccine in women aged 24–45 years: a randomised, double-blind trial

Nubia Muñoz, Ricardo Manalastas Jr, Punee Pitisuttithum, Damrong Tresukosol, Joseph Monsonego, Kevin Ault, Christine Clavel, Joaquin Luna, Evan Myers, Sara Hood, Oliver Bautista, Janine Bryan, Frank J Taddeo, Mark T Esser, Scott Vuocolo, Richard M Haupt, Eliav Barr, Alfred Saah

Lancet 2009; 373: 1949–57

Gardasil in Women >26 Years Old: Questions

- Decreasing health impact of vaccination with age:
  - Prevalence of prior infection increases
  - Incidence of new infection decreases
- Vaccination becomes less cost-effective as age increases
- Most ACIP Work Group members did not support vaccination of women >26 years of age
- Await data from clinical trials, FDA, cost-effectiveness

FDA Licensure: Indications for Quadrivalent HPV Vaccine in Males

- Prevention of the following diseases caused by HPV types 6 and 11:
  - genital warts
- Approved for use in males aged 9 through 26 years

http://www.fda.gov/BiologicsBloodVaccines/Vaccines/ApprovedProducts/ucm094042.htm

Quadrivalent HPV Vaccine Efficacy Prevention of HPV 6, 11-related Genital Warts, Males 16-26 years

Endpoint	HPV4 n/N	Placebo n/N	% Efficacy (95% CI)
Genital warts	3/1245	28/1244	89 (66, 98)

Interim Analysis; per-protocol efficacy population, mean follow-Up 2.2 yrs, received all three doses of vaccine; naïve to vaccine type at baseline

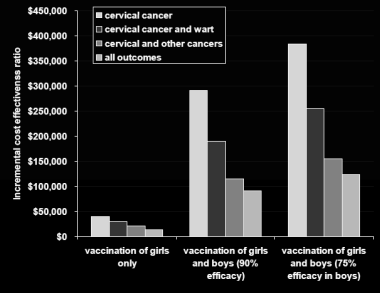
Ref: BLA, Presentation for VRBPAC Meeting, Sept 9, 2009

CDC

Quadrivalent HPV Vaccine in Males?

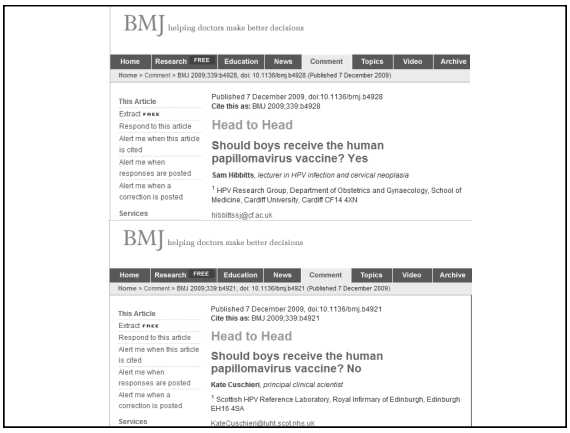
- Little benefit to women if they have high vaccination rates
- Cost-effective?
  - Kim/Goldie model: >$100,000/QALY for most scenarios
  - Merck models (more outcomes included): <$50,000/QALY
- No data on prevention of precancerous lesions

Impact of Efficacy and Disease Outcomes on Cost Effectiveness Ratios for Male HPV Vaccination in the US



Kim and Goldie. BMJ 2009

HPV Infection and Newer Vaccines: An Update
Dr. S. Tsiodras, University of Athens Medical School, Greece
A Webber Training Teleclass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Published 7 December 2009, doi:10.1136/bmj.b4928
Cite this as: BMJ 2009;339:b4928

Head to Head

Should boys receive the human papillomavirus vaccine? Yes

Sam Hibbitts, *lecturer in HPV infection and cervical neoplasia*

[1] HPV Research Group, Department of Obstetrics and Gynaecology, School of Medicine, Cardiff University, Cardiff CF14 4XN

hibbittssj@cf.ac.uk

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Published 7 December 2009, doi:10.1136/bmj.b4921
Cite this as: BMJ 2009;339:b4921

Head to Head

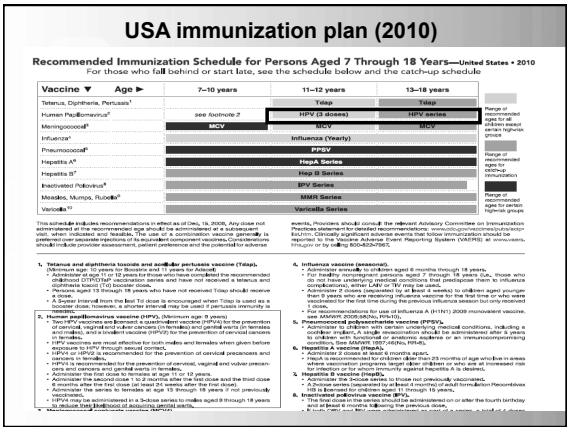
Should boys receive the human papillomavirus vaccine? No

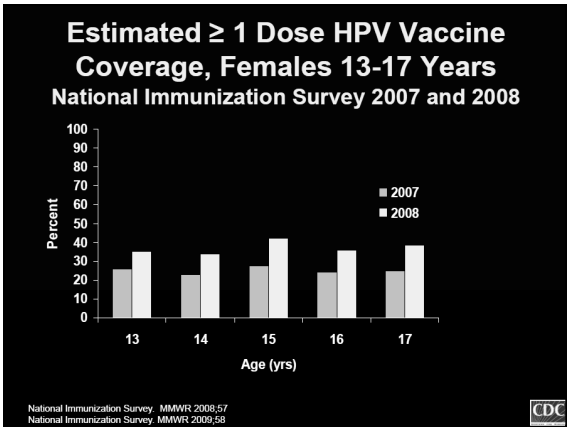
Kate Cuschieri, *principal clinical scientist*

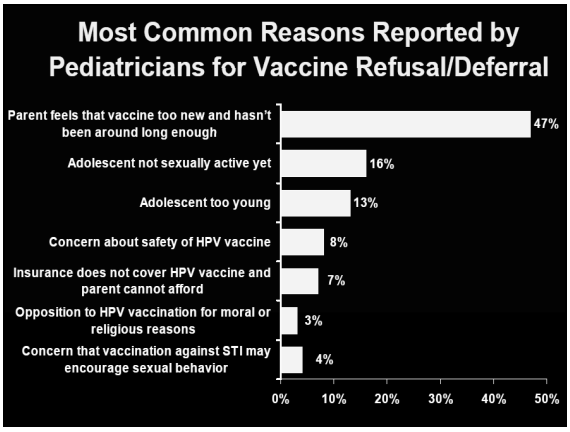
[1] Scottish HPV Reference Laboratory, Royal Infirmary of Edinburgh, Edinburgh EH16 4SA

KateCuschieri@luht.scot.nhs.uk

State of vaccination
USA - Australia - Europe

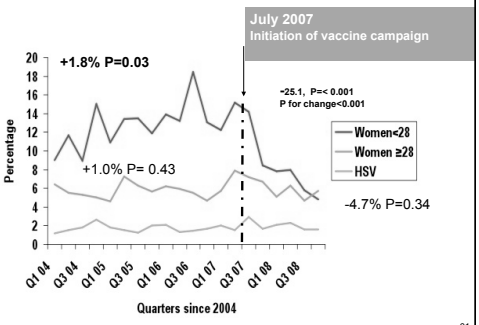






HPV Infection and Newer Vaccines: An Update
Dr. S. Tsiodras, University of Athens Medical School, Greece
A Webber Training Teleclass

Quadrivalent in Australia



Fairley C K et al – Melbourne, Australia

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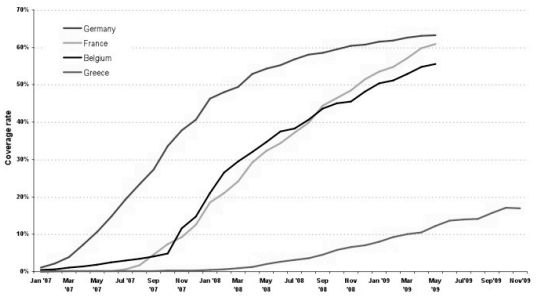
HPV vaccination -Europe

Πηγή : ECCA (European Cervical Cancer Association) April 2009

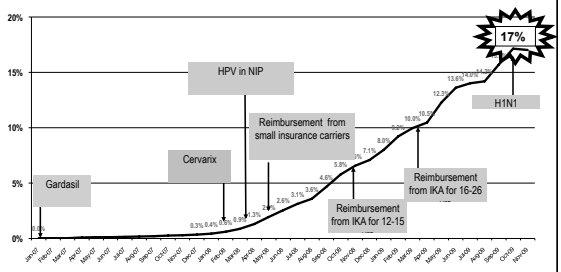
HPV vaccination in Germany, France & Belgium



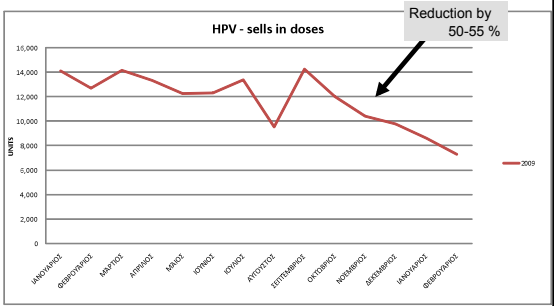
Source: IMS – May' 09

HPV vaccination Greece

Rates of coverage women aged 12-26 yrs



Pandemic and HPV vaccination – Data from Greece



IMS DATA

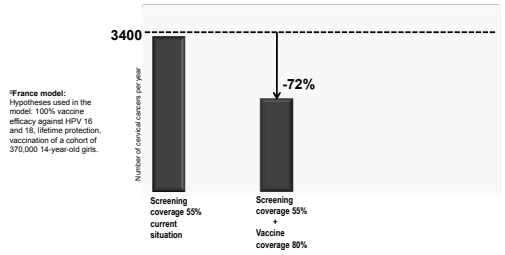
Cervical Ca – HPV vaccines

- ***What else should we know;***
  - HPV vaccines will not prevent entire range of HV infection and all cases of cervical Ca
  - HPV vaccines will not prevent other STDs e.g. HSV, HIV
  - HPV vaccines will not eliminate the need for cervical cancer screening
  - HPV vaccine may offer postoperative protection from recurrent disease (SGOC, Chicago 2010)

Cervical Ca
SCREENING ISSUES…

High vaccine coverage plus screening w PAP - ↓↓ cervical Ca
FRENCH MODEL

Estimated decrease of expected annual number of cervical cancers in France after introduction of vaccination[9,17]



[9]**France model:** Hypotheses used in the model: 100% vaccine efficacy against HPV 16 and 18, lifetime protection, vaccination of a cohort of 370,000 14-year-old girls.

* Minimum expected impact is 60% (mono-infection), up to a maximum of 72% (co-infection).

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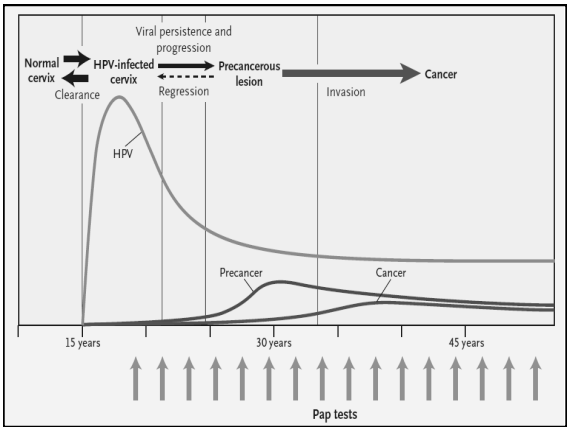
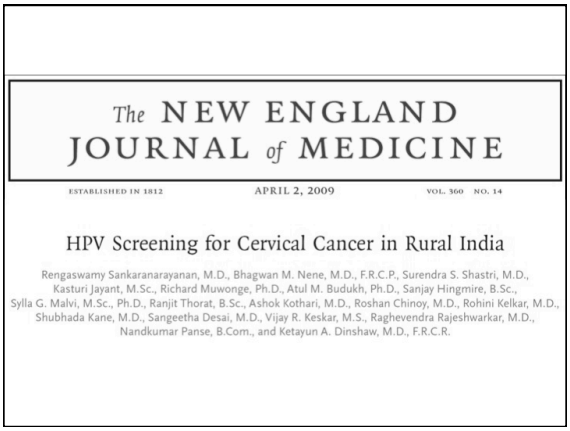


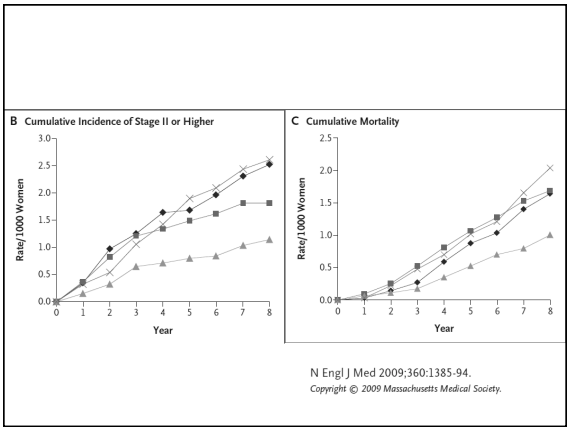


The NEW ENGLAND JOURNAL of MEDICINE

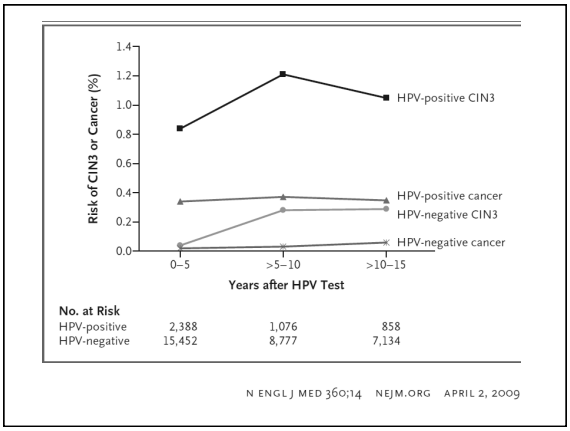
ESTABLISHED IN 1812 APRIL 2, 2009 VOL. 360 NO. 14

HPV Screening for Cervical Cancer in Rural India

Rengaswamy Sankaranarayanan, M.D., Bhagwan M. Nene, M.D., F.R.C.P., Surendra S. Shastri, M.D., Kasturi Jayant, M.Sc., Richard Muwonge, Ph.D., Atul M. Budukh, Ph.D., Sanjay Hingmire, B.Sc., Sylla G. Malvi, M.Sc., Ph.D., Ranjit Thorat, B.Sc., Ashok Kothari, M.D., Roshan Chinoy, M.D., Rohini Kelkar, M.D., Shubhada Kane, M.D., Sangeetha Desai, M.D., Vijay R. Keskar, M.S., Raghevendra Rajeshwarkar, M.D., Nandkumar Panse, B.Com., and Ketayun A. Dinshaw, M.D., F.R.C.R.



N Engl J Med 2009;360:1385-94.



N ENGL J MED 360;14 NEJM.ORG APRIL 2, 2009

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Perspective

Cervical-Cancer Screening — New Guidelines and the Balance between Benefits and Harms

George F. Sawaya, M.D.

Cervical Cytologic Screening Guidelines from the American College of Obstetricians and Gynecologists, 2009.

Age	Recommendation for Cytologic Screening
Under 21 yr	Avoid screening
21 to 29 yr	Screen every 2 yr
30 to 65 or 70 yr	May screen every 3 yr*
Between 65 and 70 yr	May discontinue screening†

HPV vaccines
newer data…

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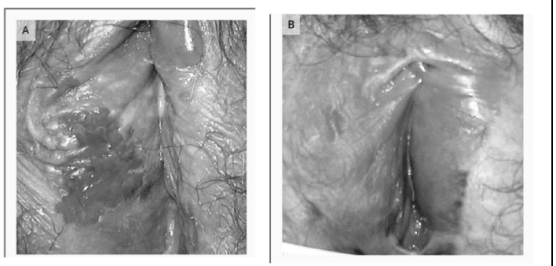
ORIGINAL ARTICLE

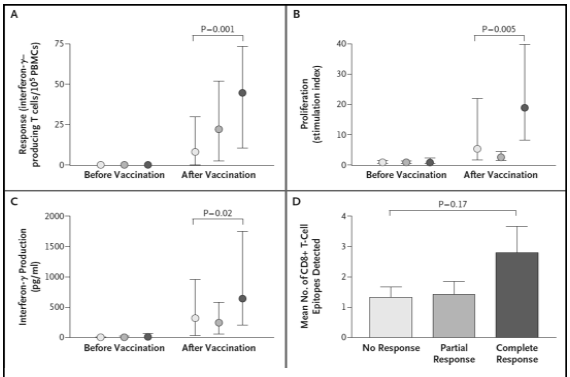
Vaccination against HPV-16 Oncoproteins for Vulvar Intraepithelial Neoplasia

Gemma G. Kenter, M.D., Ph.D., Marij J.P. Welters, Ph.D., A. Rob P.M. Valentijn, Ph.D., Margriet J.G. Lowik, Dorien M.A. Berends-van der Meer, Annelies P.G. Vloon, Farah Essahsah, Lorraine M. Fathers, Rienk Offringa, Ph.D., Jan Wouter Drijfhout, Ph.D., Amon R. Wafelman, Ph.D., Jaap Oostendorp, Ph.D., Gert Jan Fleuren, M.D., Ph.D., Sjoerd H. van der Burg, Ph.D., and Cornelis J.M. Melief, M.D., Ph.D.

N Engl J Med 2009;361:1838-47.

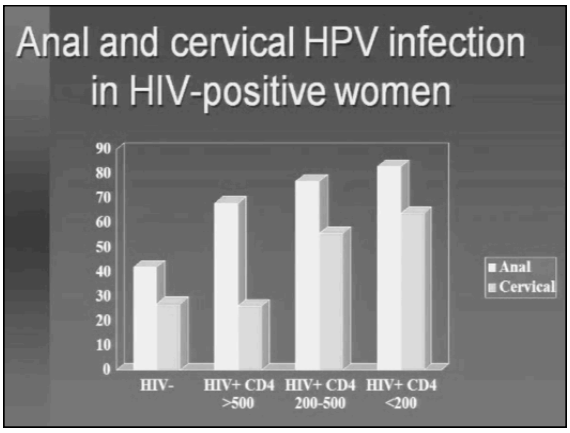


N Engl J Med 2009;361:1838-47.



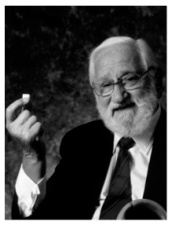
N Engl J Med 2009;361:1838-47.

HPV & anal Ca
HPV & Ca of head & neck
HPV & HIV



Conclusions

- The identification of local risk factors for HPV infection together with the new vaccines will assist control of the HPV associated disease
- Molecular epidemiology of the infection should continue with the introduction of newer vaccines
- Vaccination should be encouraged
- Therapeutic vaccines in the near future !



"A vaccine
that sits on the shelf
is useless"

THANK YOU !!!

The Next Few Teleclasses

20 Apr. 10	(Free Teleclass) Voices of the IPS Speaker: Infection Prevention Society Board Members & Guests
21 Apr. 10	(South Pacific Teleclass) MRSA – The Patient Experience Dr. Ruth Barratt, New Zealand
22 Apr. 10	Influenza in the Hospital – Who Gets it From Whom Speaker: Dr. Allison McGeer, Mount Sinai Hospital, Toronto
29 Apr. 10	Simple Precautions – Simplifying Infection Control Speaker: Dr. Jim Hutchinson, Health Care Corporation of St. John's
6 May 10	Disinfection and Sterilization: Special Emphasis on Pediatric Issues Speaker: Dr. William Rutala, University of North Carolina
13 May 10	Multi-Drug Resistant Organisms in a Behavioral Health Setting Speaker Gail Bennett, ICP Associates
20 May 10	Epidemiology of Healthcare Associated Infections in Limited Resource Settings Speaker: Dr. Victor Rosenthal, Medical College of Buenos Aires

www.webbertraining.com.schedulep1.php