

# *Outline*

- GAVI Alliance (Global Alliance for Vaccines and Immunization) and HPV vaccination
- New recommendations from CDC ACIP (Advisory Committee on Immunization Practices)
- Vaccine implementation: Scientific and other issues
- Vaccine impact at population level
- Going forward

# ***GAVI Alliance and HPV/cervical cancer***

- GAVI Alliance intends to support HPV vaccination of young adolescent girls and cervical cancer screening of adult women in the developing world
  - An opportunity for sustained support in low resource settings

## ***New Recommendations of CDC ACIP (Advisory Committee on Immunization Practices)***

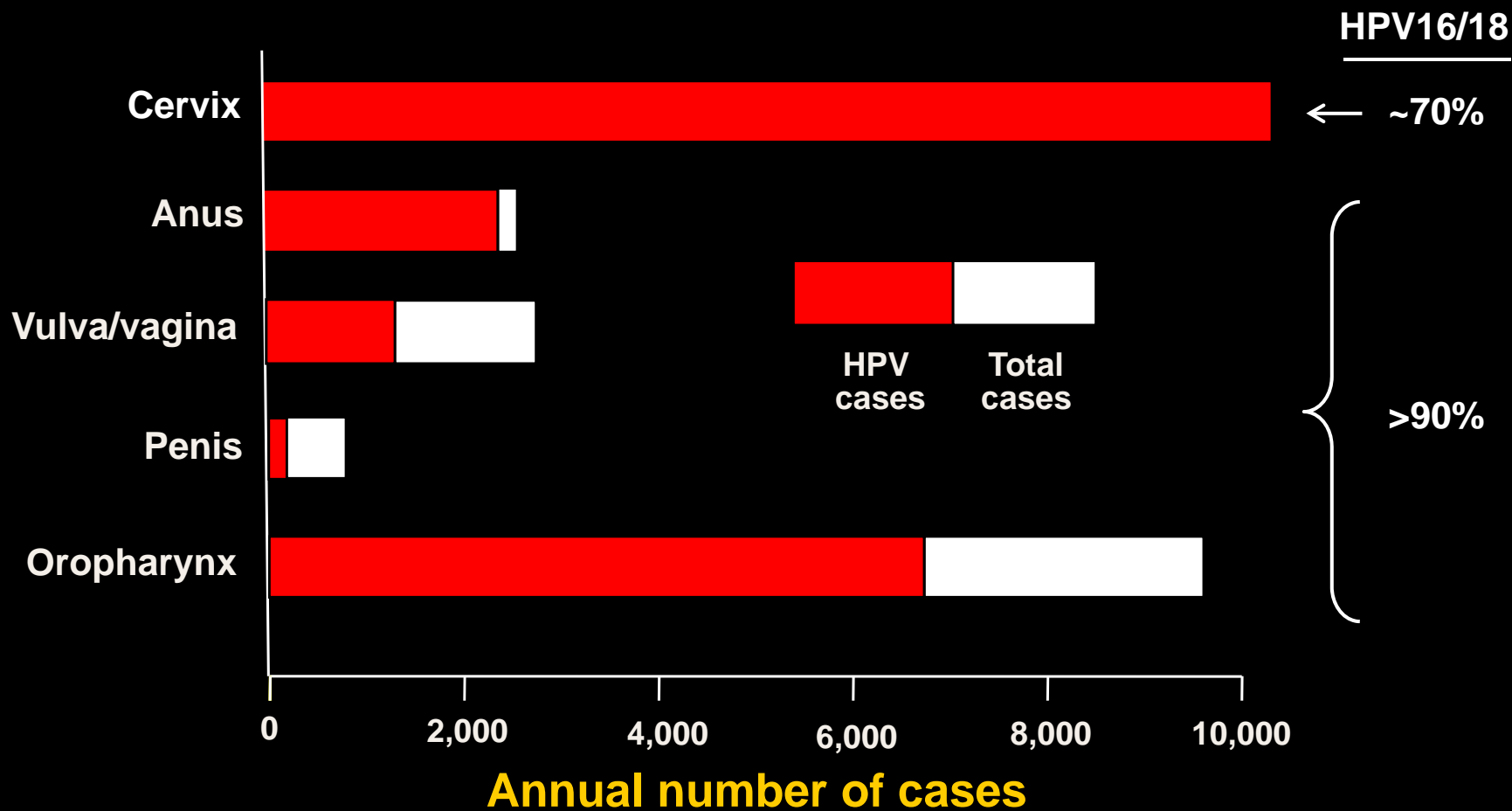
- “Routine” vaccination for males 11-21 (new)
  - Target 11-12, catch-up 13-21
  - “Permissive” vaccination 9-10, 22-26
- “Routine” vaccination for females 11-26 (unchanged)
  - Target 11-12, catch-up 13-26
  - “Permissive” 9-10

NB: Merck vaccine FDA approved for both genders; GSK vaccine approved for females

## ***Rationale for “Routine” male vaccination***

- Low uptake among females implies limited herd immunity
  - Without herd immunity, female vaccination will not protect men from HPV-associated disease
- ~30% of HPV-associated cancers in US occur in males (and a higher percentage of genital warts)
- Herd immunity with male vaccination is more likely to extend to men who have sex with men
- Gender equity

# United States: Incidence and Distribution of Cancers Attributable to HPV



- *Pap screening has reduced the incidence of cervical cancer by ~80%*
- *Incidence of HPV-positive oropharynx cancer 1988-2004 increased 225%*

*Gillison, Chaturvedi, and Lowy. Cancer 113: S3036-46, 2008; Chaturvedi et al, J Clin Oncol, Oct. 3, 2011*

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# ***Lower Uptake of HPV Vaccine in US***

- Medical uncertainties at time of FDA approval (June 2006)
- Concerns from efforts to make vaccine mandatory in 2007
- Concerns about promotion of sexual disinhibition

# ***Medical Uncertainties at time of FDA Approval of HPV Vaccine (2006)***

- Rare serious adverse events?
  - Target population (11-12 year olds) had been studied less extensively than 16-23 year olds
- Duration of protection? (need for booster?)
- Lack of protection against some HPV types that cause cervical cancer
- Replacement of HPV “vaccine types” with other HPV types?



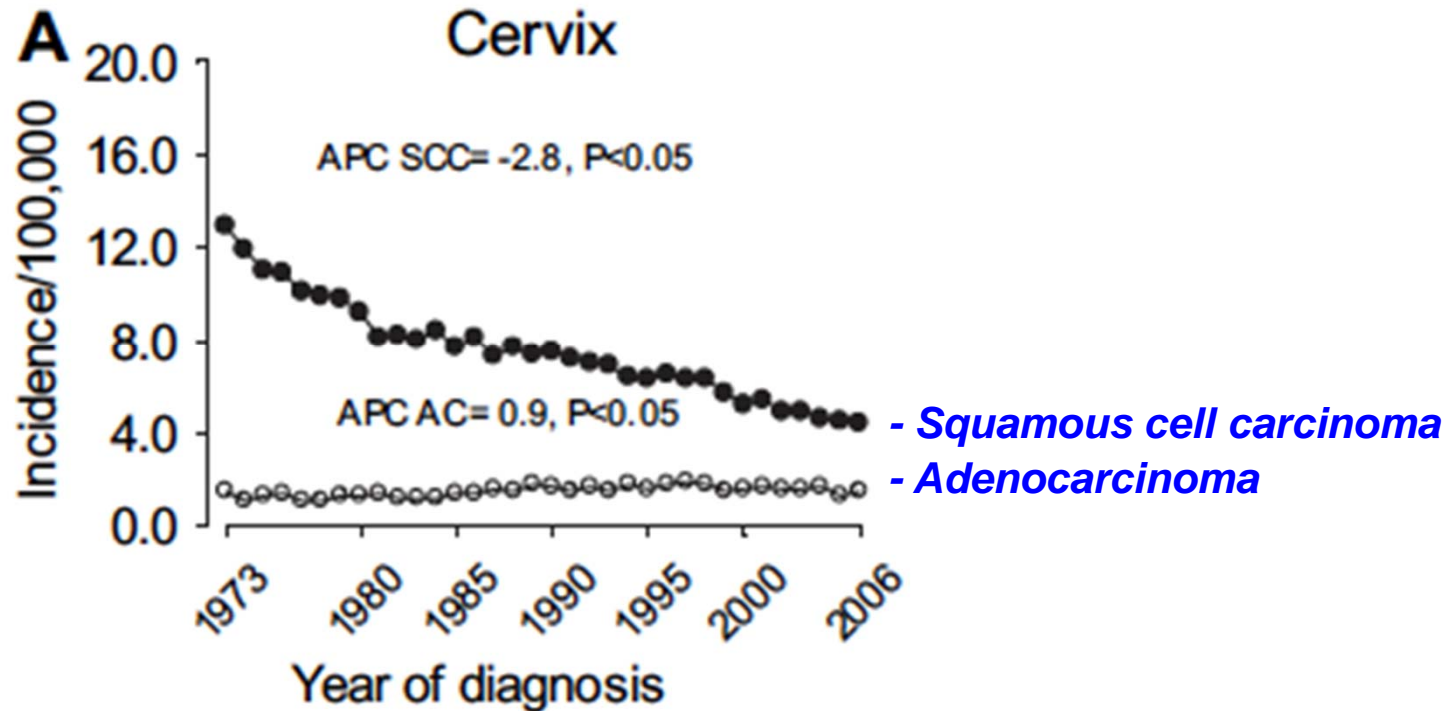
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## ***Ambivalent Reception in Some Medical Circles***

- Editorial: Human papillomavirus vaccination — reasons for caution. C. Haug, N Eng J Med 2008
- Editorial: The risks and benefits of HPV vaccination. C. Haug, JAMA 2009
  - “***The relationship between infection at a young age and development of cancer 20 to 40 years later is not known...***It is impossible to predict exactly what effect vaccination of young girls and women will have on the incidence of cervical cancer 20 to 40 years from now.”

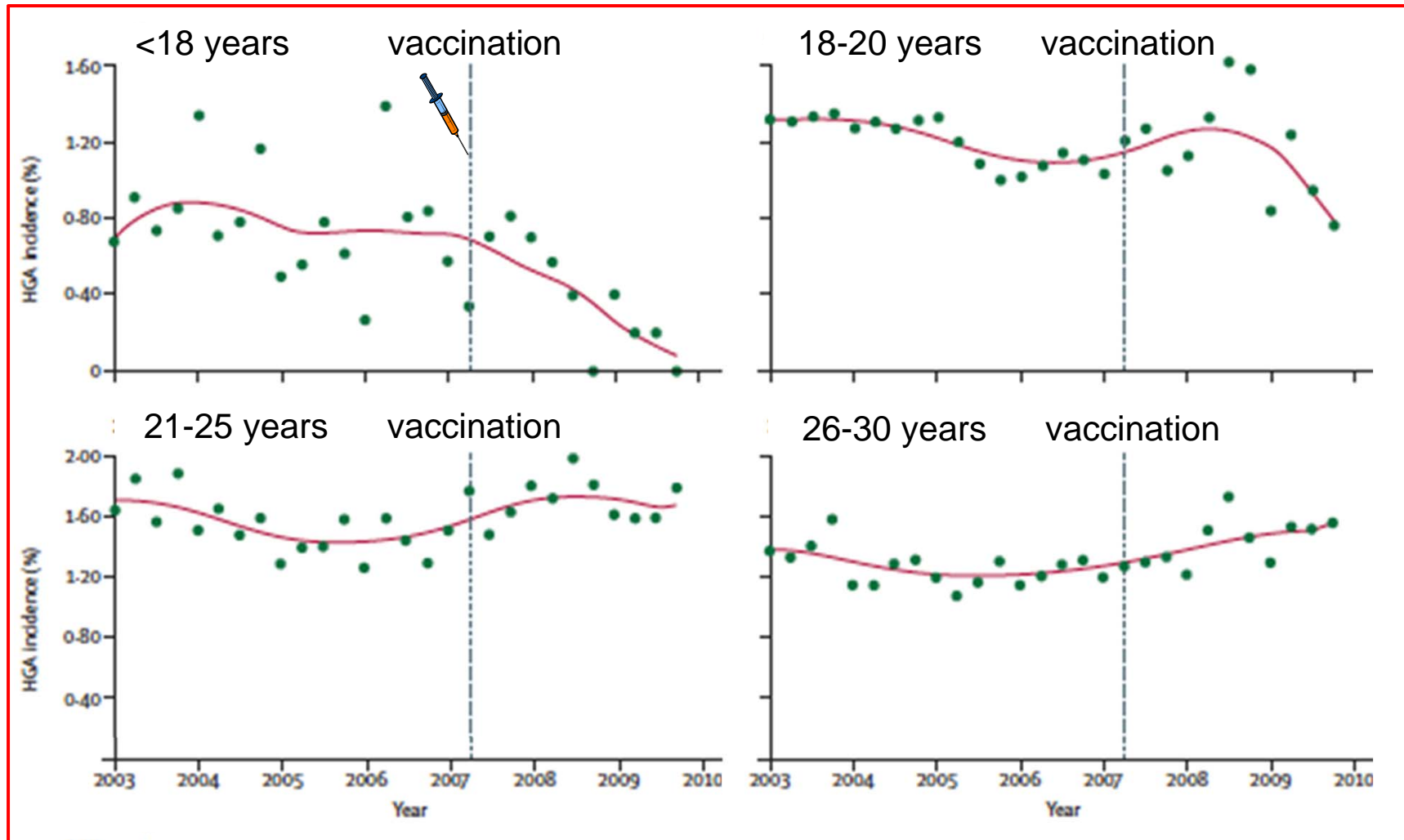
## Changes in US Cervical Cancer Incidence: Squamous Cell Carcinoma vs. Adenocarcinoma



*Chaturvedi et al, J Adolesc Health, 2010 (from NCI SEER data)*

The HPV vaccine can prevent adenocarcinoma in situ more efficiently than cytology (Ault et al, Int J Cancer 128:1344-53, 2011)

# Reduction in CIN2+ cervical dysplasia: Gardasil in Australia





Contents lists available at SciVerse ScienceDirect

Vaccine

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



## Monitoring the safety of quadrivalent human papillomavirus vaccine: Findings from the Vaccine Safety Datalink<sup>☆</sup>

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- Post-licensure assessment of 600,558 doses (Gardasil) from 7 managed care organizations
- No vaccine-related increased risk to prespecified outcomes: Guillan-Barré syndrome, stroke, venous thromboembolism, appendicitis, seizure, allergic reaction
- Rate of anaphylaxis (1 case, 26 y.o.) similar to other vaccines
- Rate of fainting similar to that of other adolescent vaccines

## ***Future Directions***

- Educate medical community and general population with ***current*** information:
  - Protection conferred by vaccinating young adolescents
  - Immunogenicity, duration of protection
  - Adverse events
  - Ongoing second generation vaccine development
- Encourage research to address ongoing vaccine-related issues