

Human Papilloma Virus



Epidemiology of HPV and burden of HPV-related neoplasia in Denmark

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Disclosures

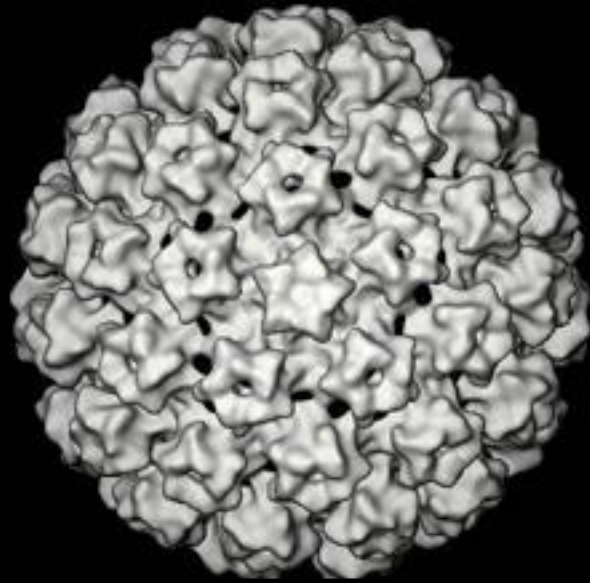
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Human papillomavirus (HPV)

Some facts

- HPV is the most frequent sexually transmitted disease
- ≥ 80% of adults will have an HPV infection at some time in their lives
- More than 200 different HPV types have been identified
 - ~ 40 have a specific affinity for the ano-genital epithelium and
 - ~ 15 types are considered to have an oncogenic potential

- **Most HPV infections**
 - **give no symptoms**
 - **disappear on their own**
- **Some women will not clear their HPV infection**
 - **they have an increased risk of cervical cancer**



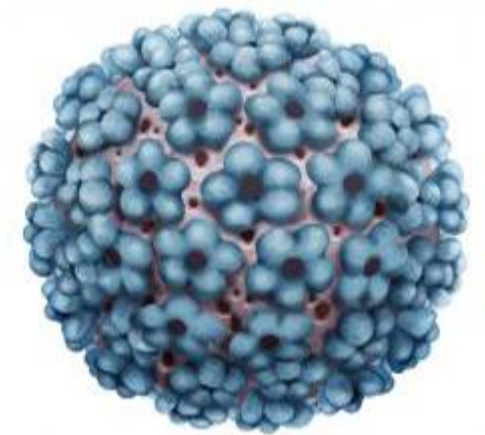
1974

Dr. Harald zur Hausen suggested that HPV, which cause skin warts, may also cause cervical cancer.

About a decade later he identified the main genotypes HPV16 and 18.

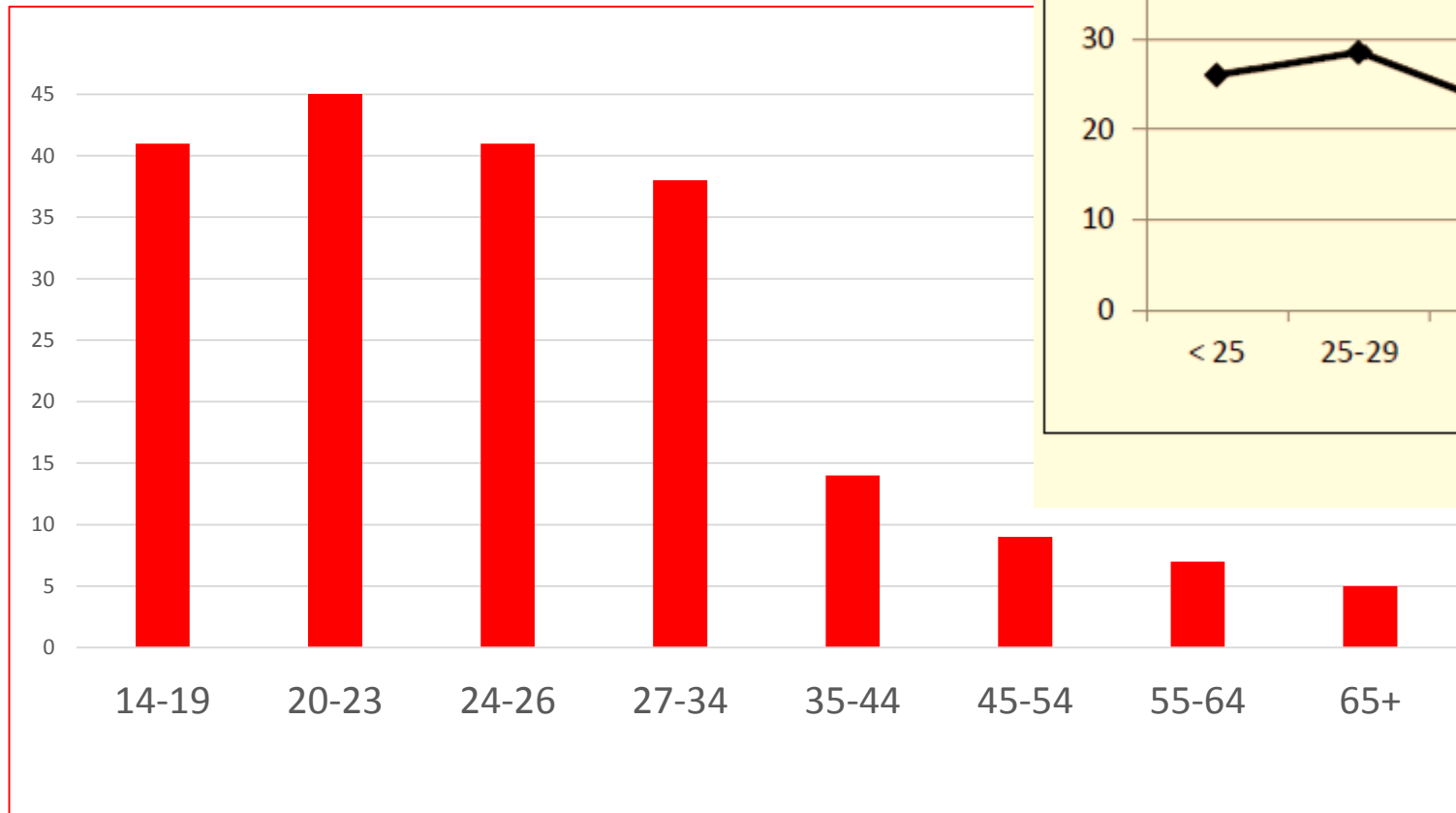
Received the Nobel prize in 2008

HPV infection in Denmark

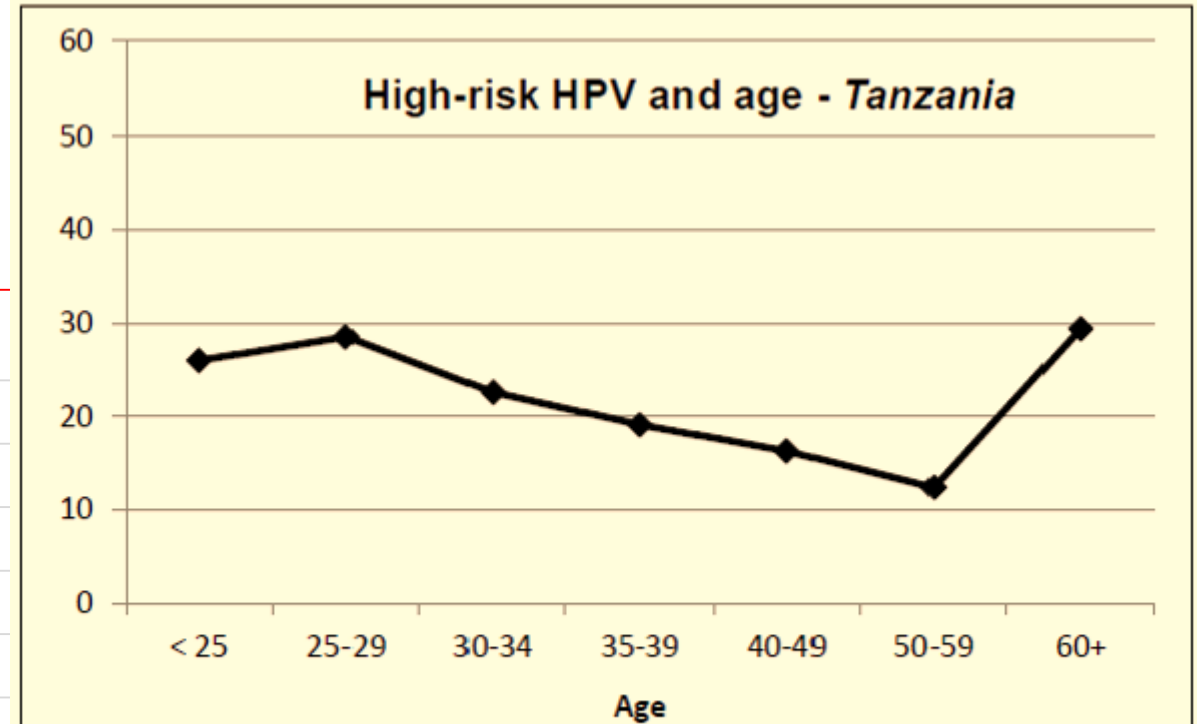


HPV prevalence among Danish women (N = 40,382)

Overall HR HPV prevalence: 20.5 %



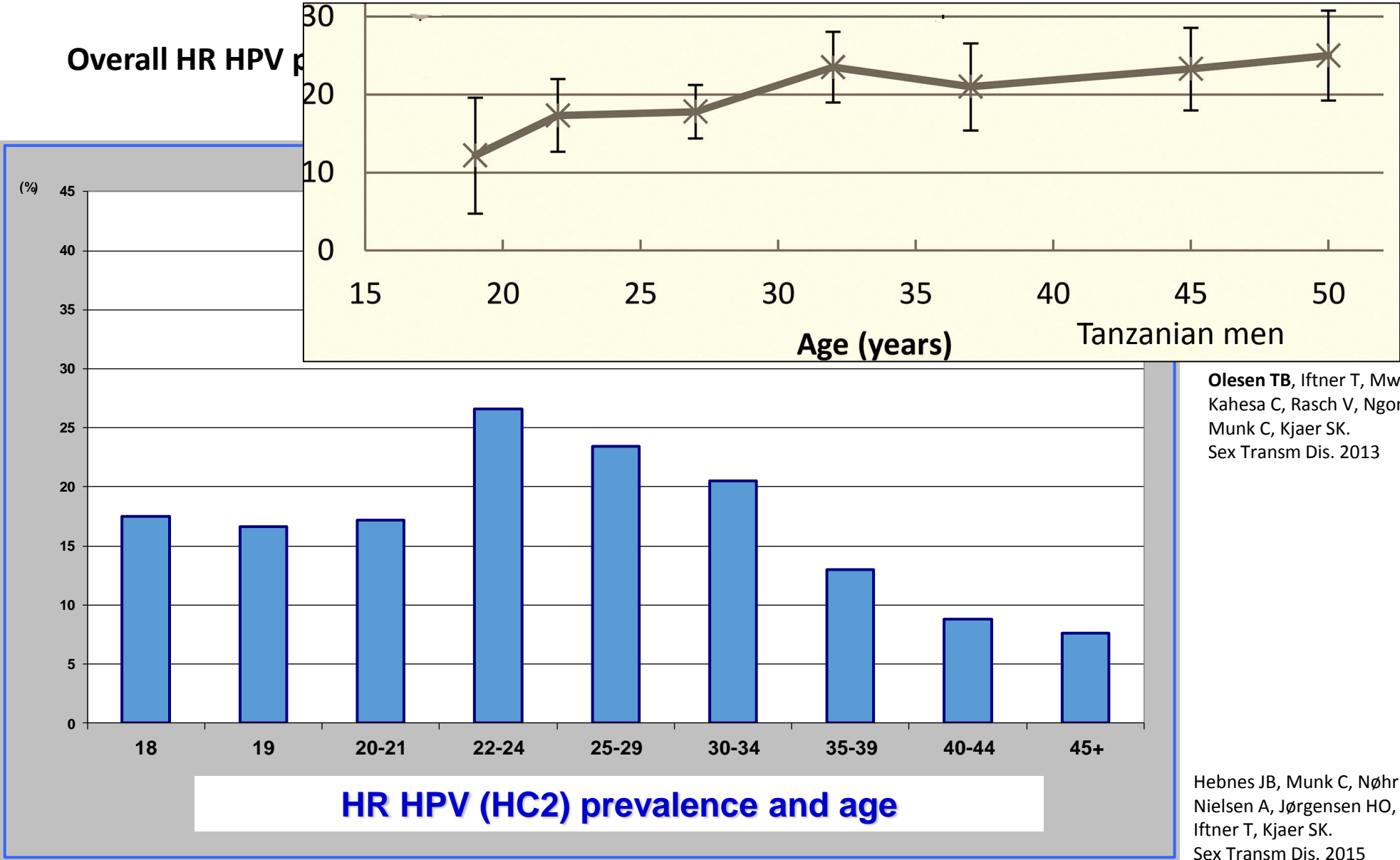
HR HPV (HC2) prevalence and age



Dartell M et al. 2012

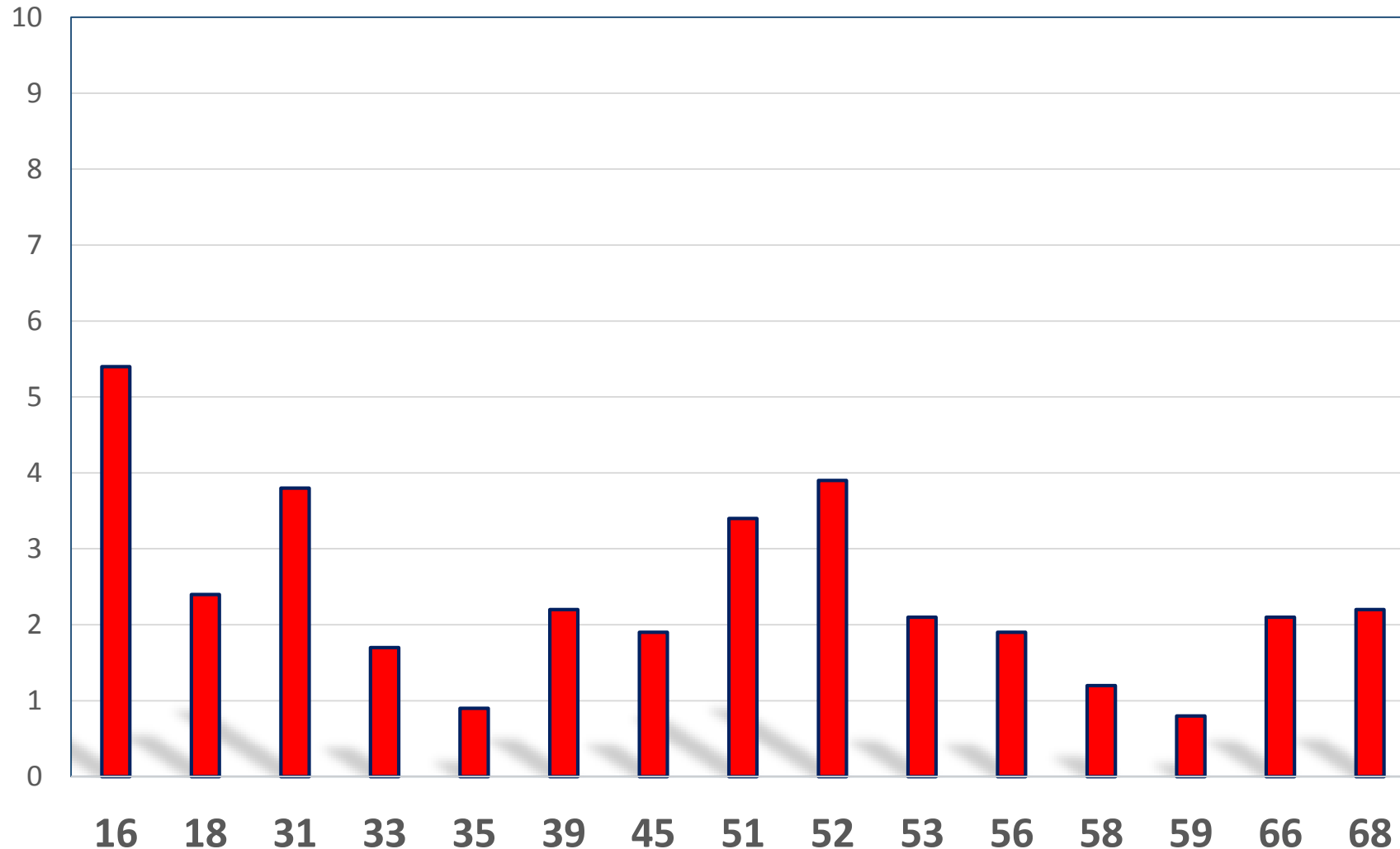
Kjær SK et al. Cancer Causes and Control 2014

HPV prevalence among 2,460 Danish men (18-65 years)



HPV prevalence among 40,382 Danish women

Distribution of HPV types in the total study population

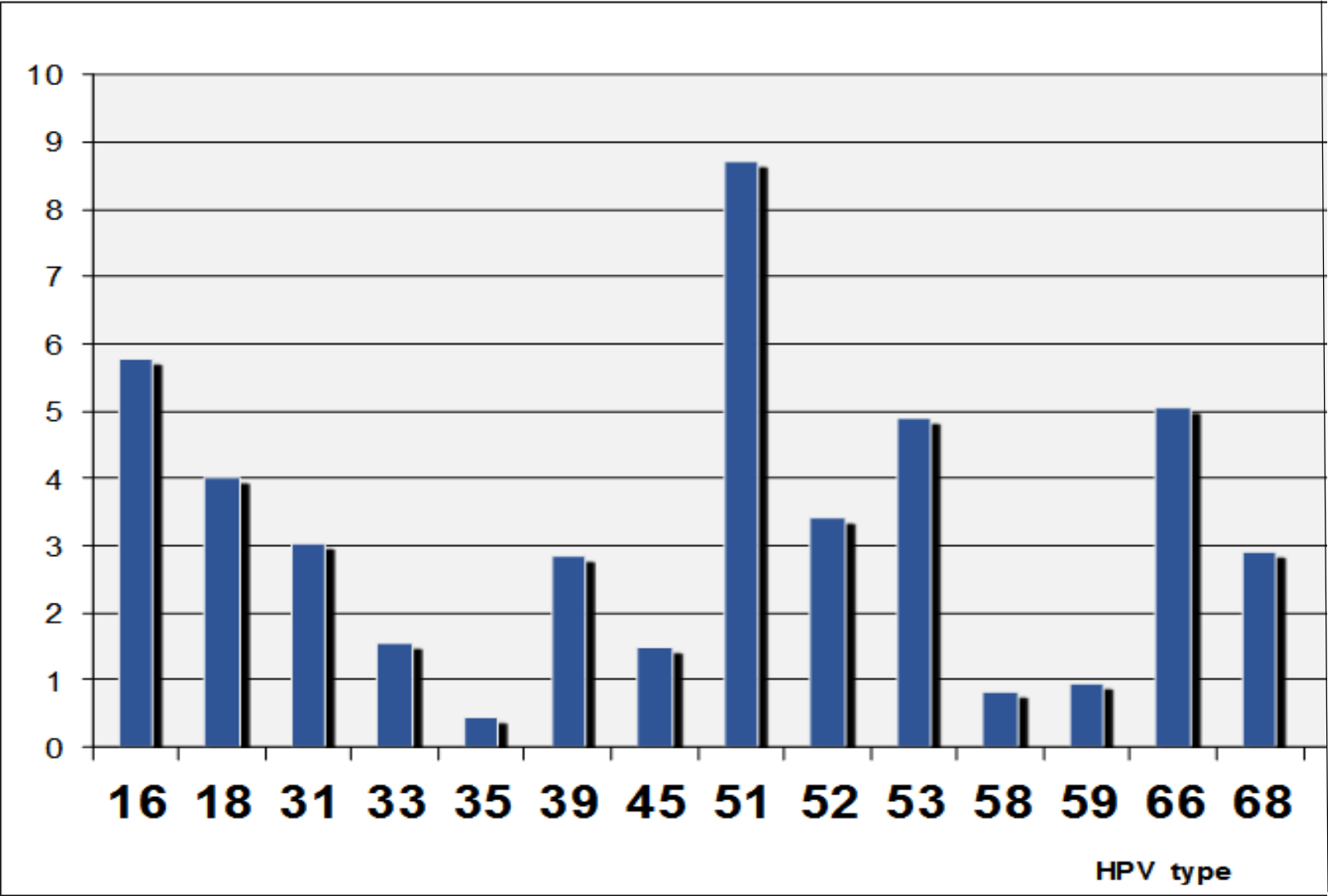


HPV types 16, 18, 31, 52, and 58 are consistently found among the 10 most common types in all regions – a meta-analysis including > 1 mill women from 5 continents

Bruni et al, J Infect Dis. 2010

HPV prevalence among 2,460 Danish men (18-65 years)

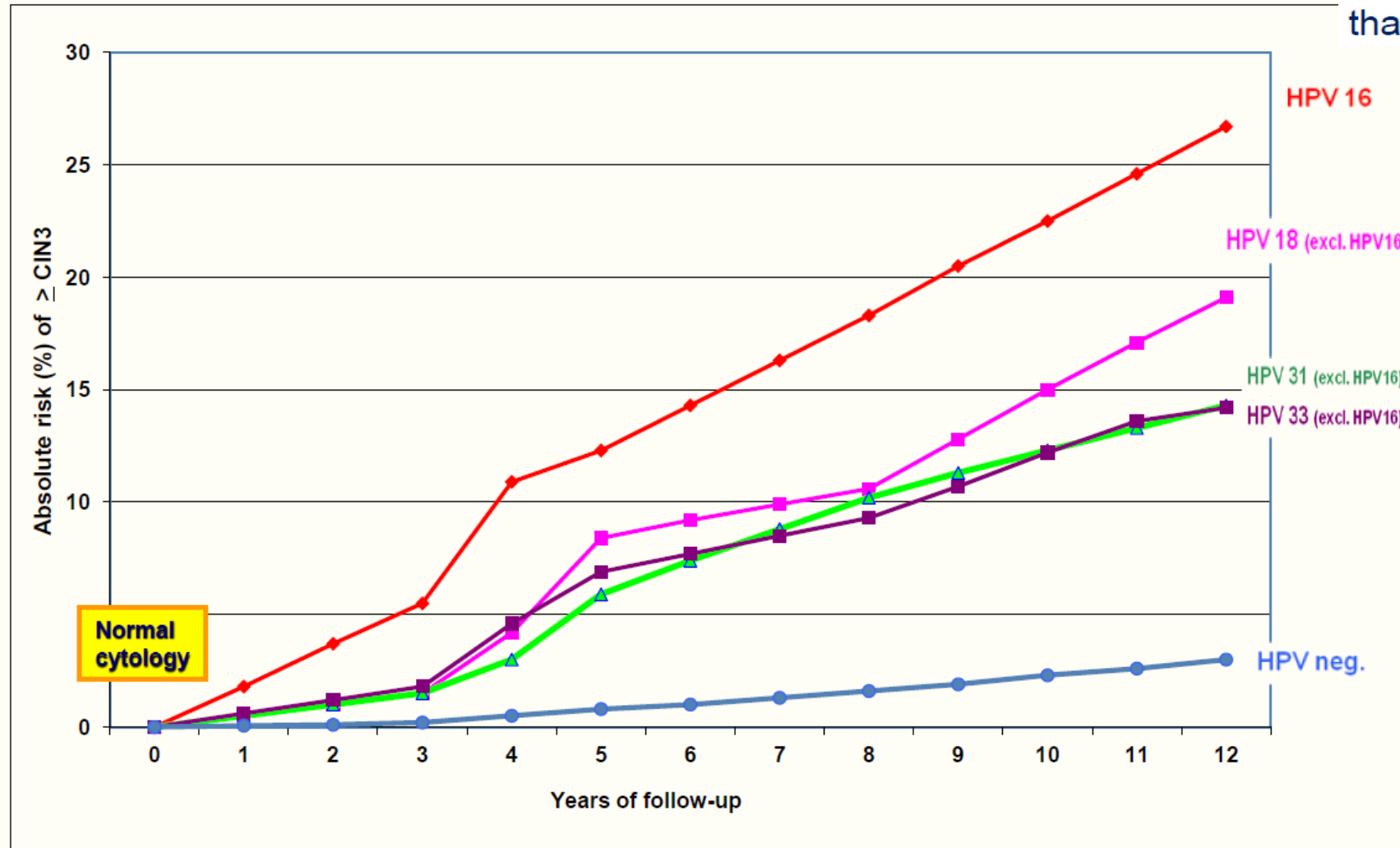
Distribution of HPV types in the total study population



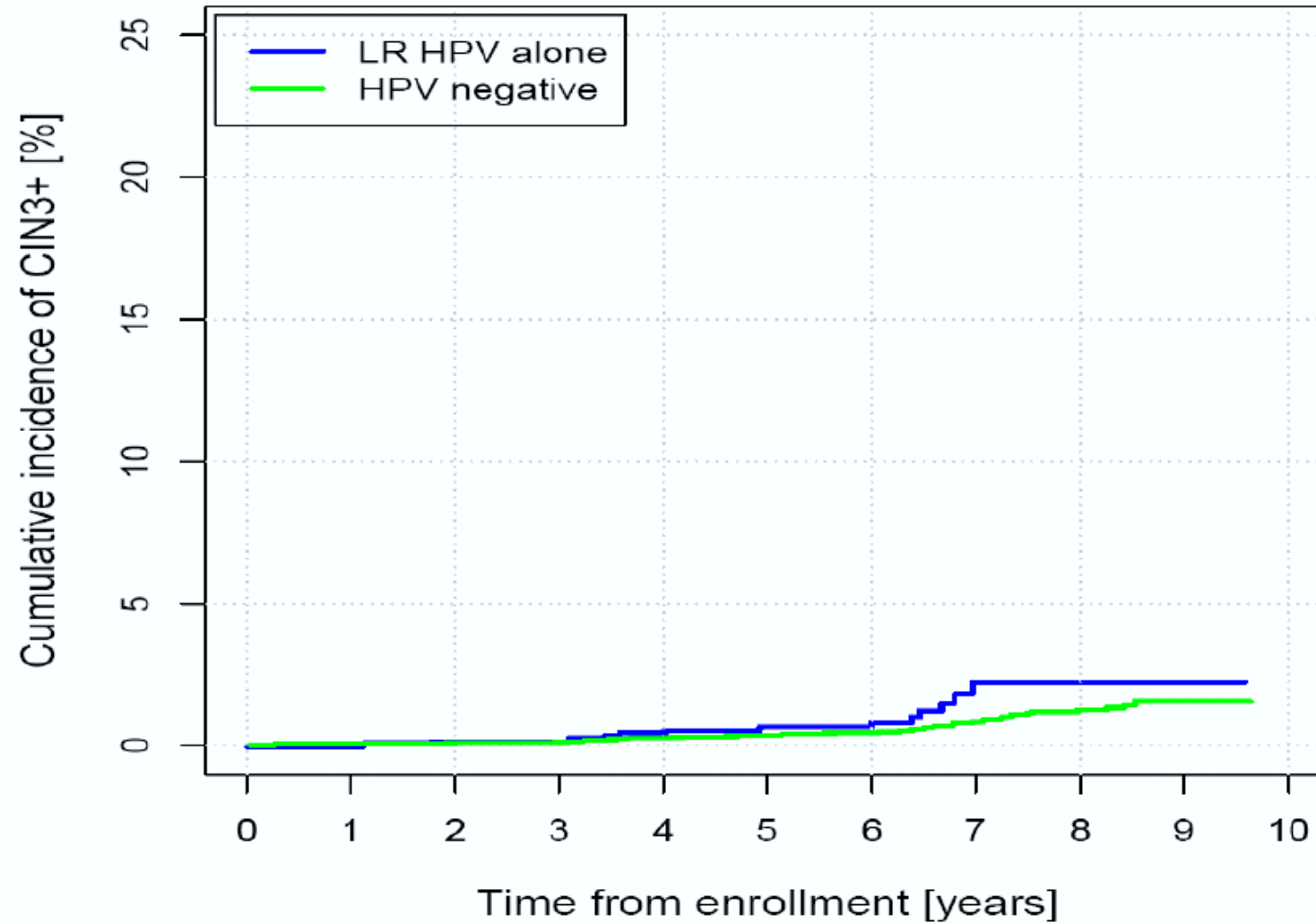
Hebnes JB, Munk C, Nøhr B,
Nielsen A, Jørgensen HO,
Iftner T, Kjaer SK.
Sex Transm Dis. 2015

Absolut risiko for CIN3+

Cohort study of 11, 000 women examined twice and followed for more than 15 years



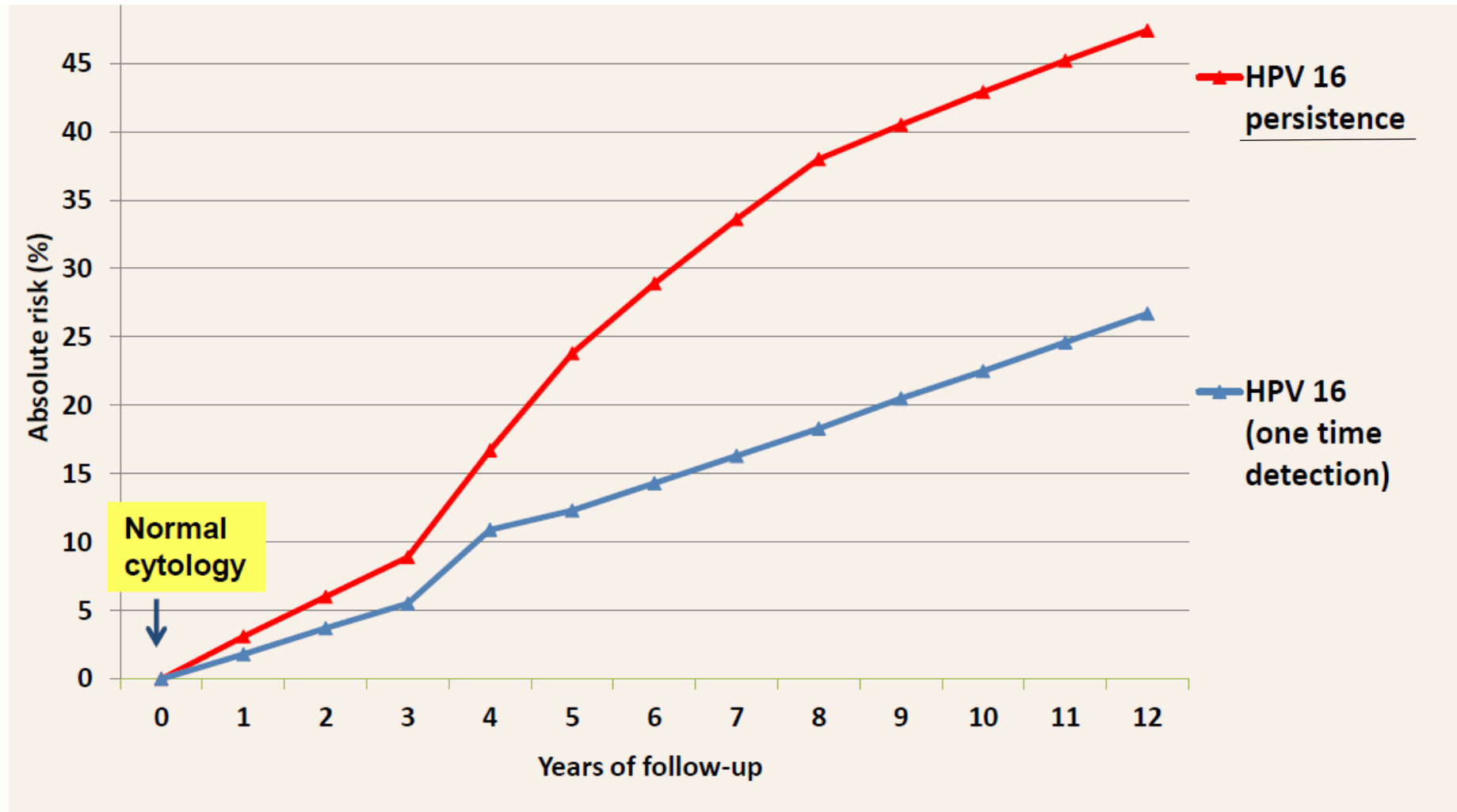
Absolut risiko for CIN3 +



Cohort study of 40,399 women enrolled 2002-2005. Currently followed for more than 9 years. Tested for HPV using HC2 low-risk probe

Absolut risiko for CIN3 + the role of persistence

Cohort study of 11, 000 women examined twice and followed for more than 15 years



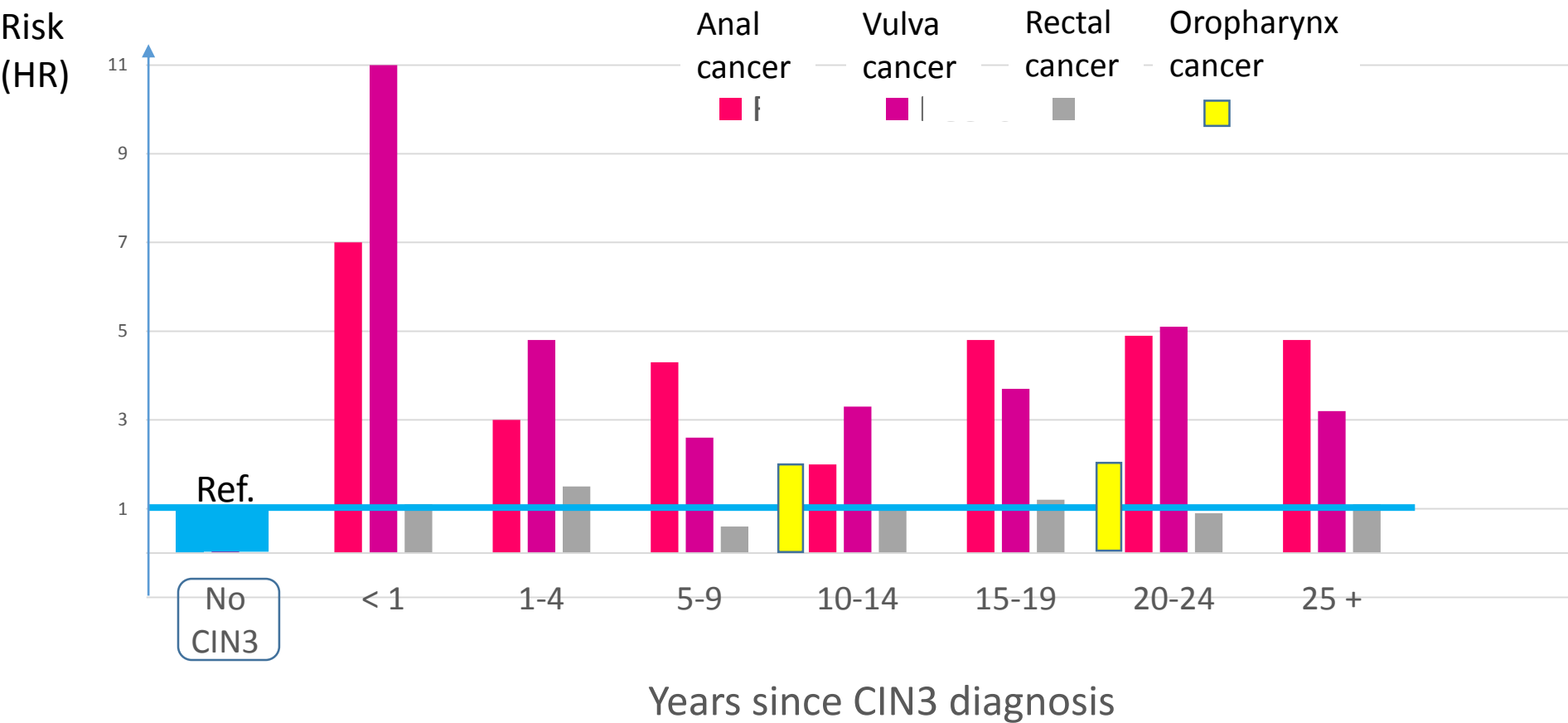
Risk of subsequent cancer in women with CIN3 (... a proxy for persistence)

	No. of women in the study population	No. of events	HR (95% CI) Adjusted for age and education
Anal cancer			
No CIN2/3 history	2,626,551	1,105	1.00
CIN2	52,135	32	2.8 (2.0–4.1)
CIN3	104,155	125	4.1 (3.4–5.0)
Vulvar cancer			
No CIN2/3 history	2,626,551	1,243	1.00
CIN2	52,135	23	2.5 (1.6–3.7)
CIN3	104,155	103	3.9 (3.2–4.8)
Vaginal cancer			
No CIN2/3 history	2,626,551	273	1.00
CIN2	52,135	11	8.3 (4.5–15.5)
CIN3	104,155	65	17.4 (13.0–23.2)

Sand FL, Munk C, Jensen SM, Svahn MF, Frederiksen K, Kjær SK.
Cancer Epidemiol Biomarkers Prev. 2016

Svahn MF, Munk C, Jensen SM, von Buchwald C, Frederiksen K, Kjær SK.
Gynecol Oncol. 2016

Risk of subsequent cancer according to time since CIN3 diagnosis



Sand FL, Munk C, Jensen SM, Svahn MF, Frederiksen K, Kjær SK.
Cancer Epidemiol Biomarkers Prev. 2016

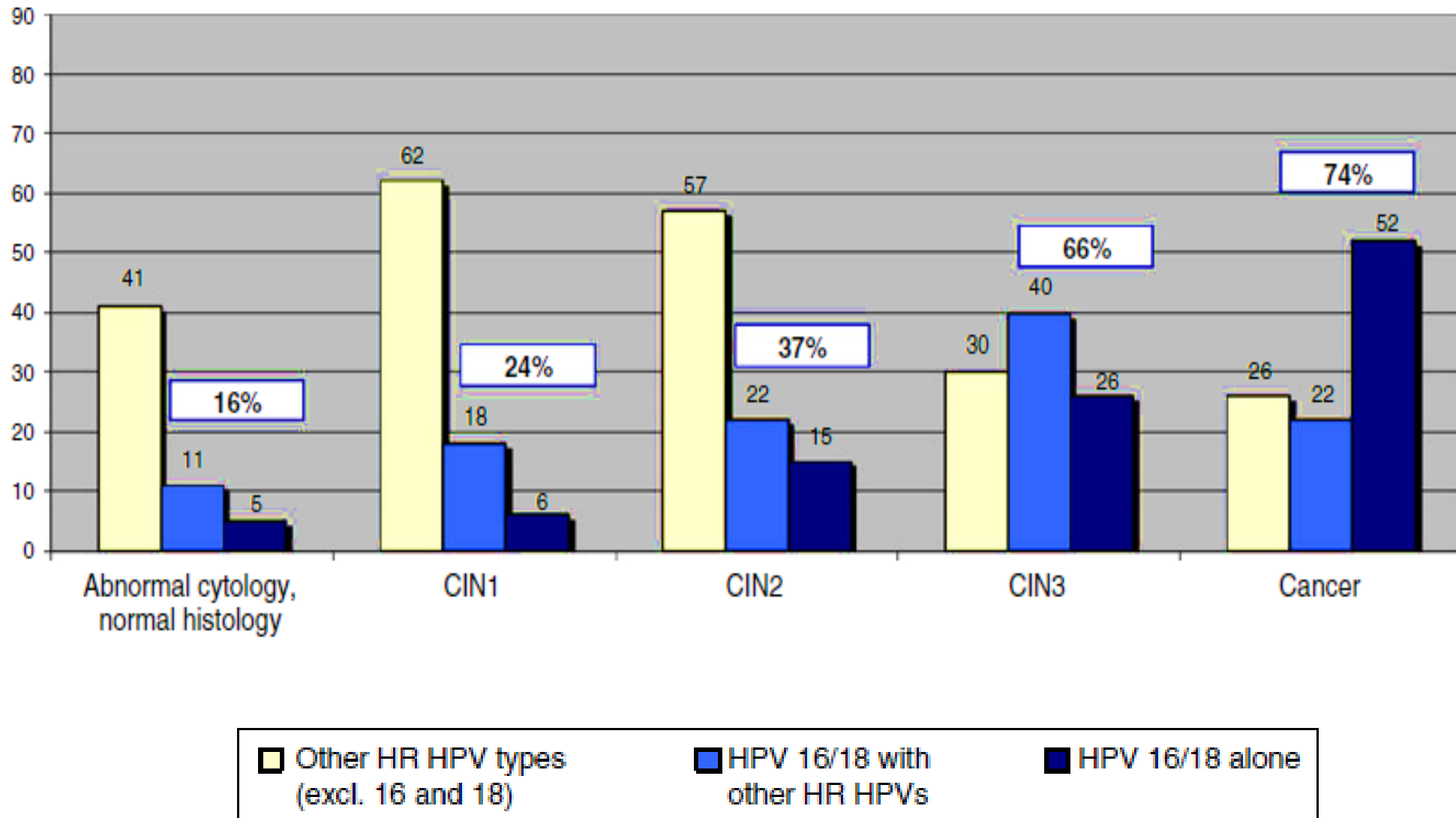
Svahn MF, Munk C, Jensen SM, von Buchwald C, Frederiksen K, Kjær SK.
Gynecol Oncol. 2016

What can we expect from HPV vaccination ?

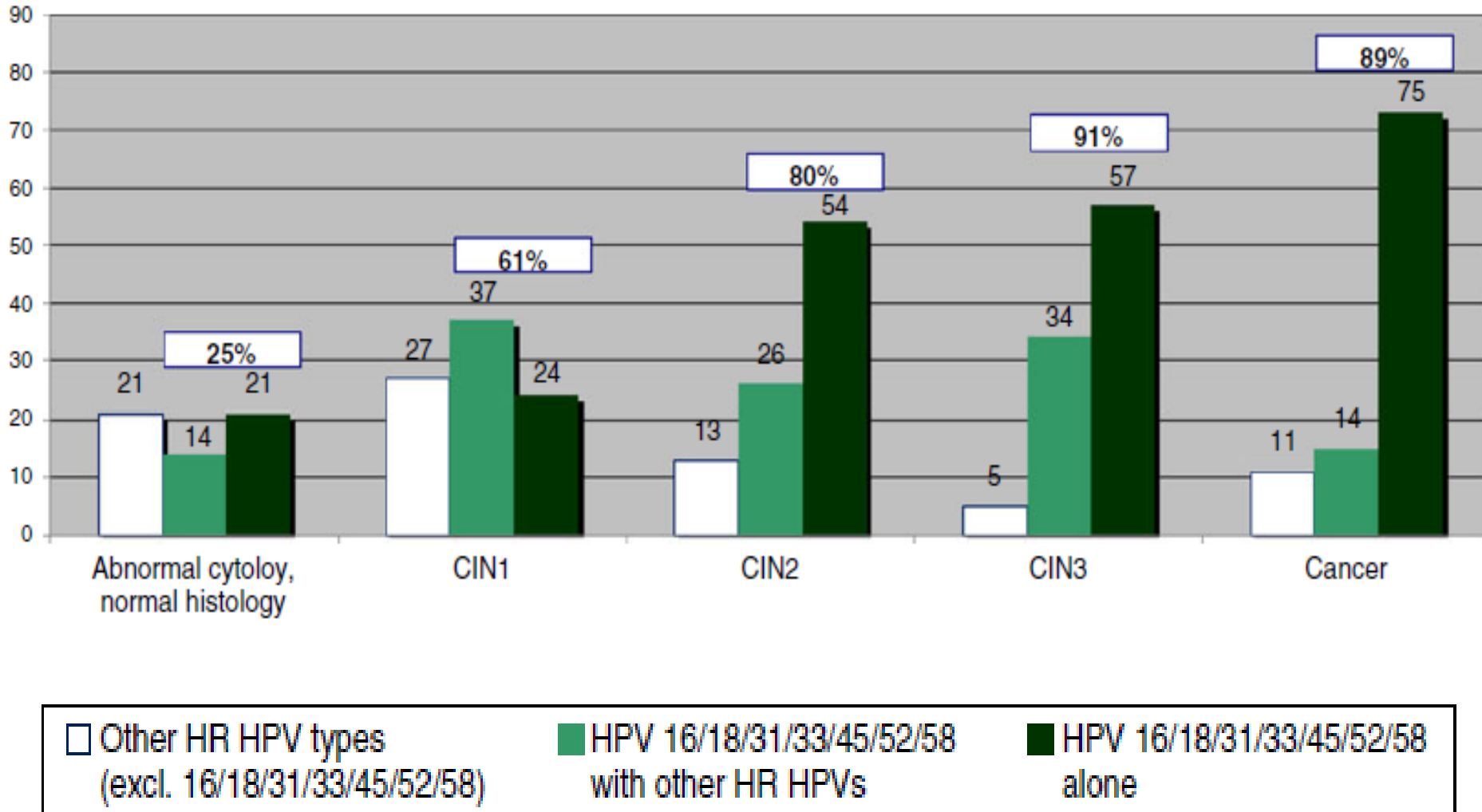
Potential preventive effect – estimations based on general population
HPV prevalence in cervical lesions

- before the implementation of HPV vaccination

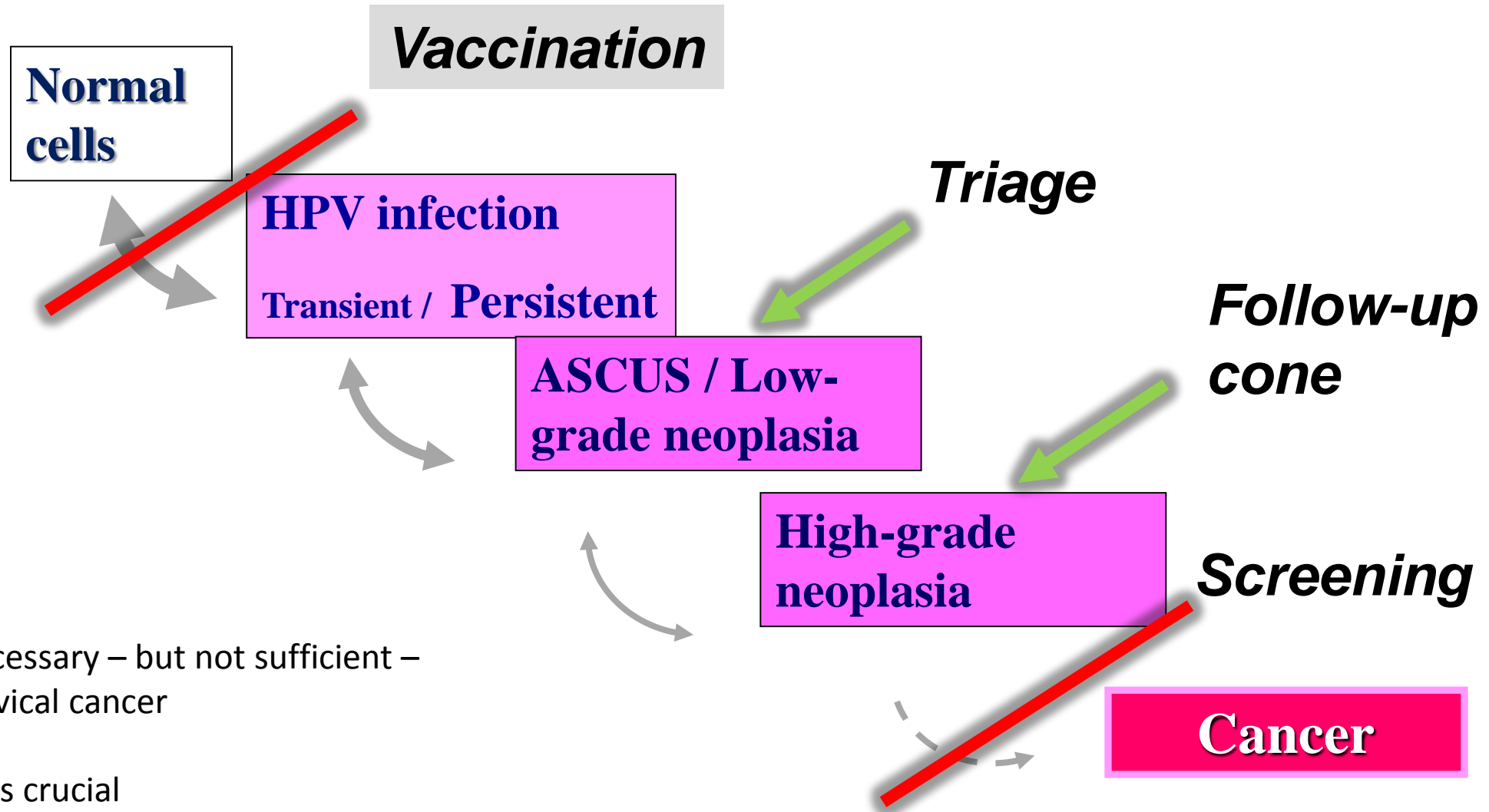
Estimated potential preventive effect of an HPV16/18 vaccine



Estimated potential preventive effect of a vaccine against HPV16/18/31/33/45/52/56



HPV and cervical neoplasia - natural history

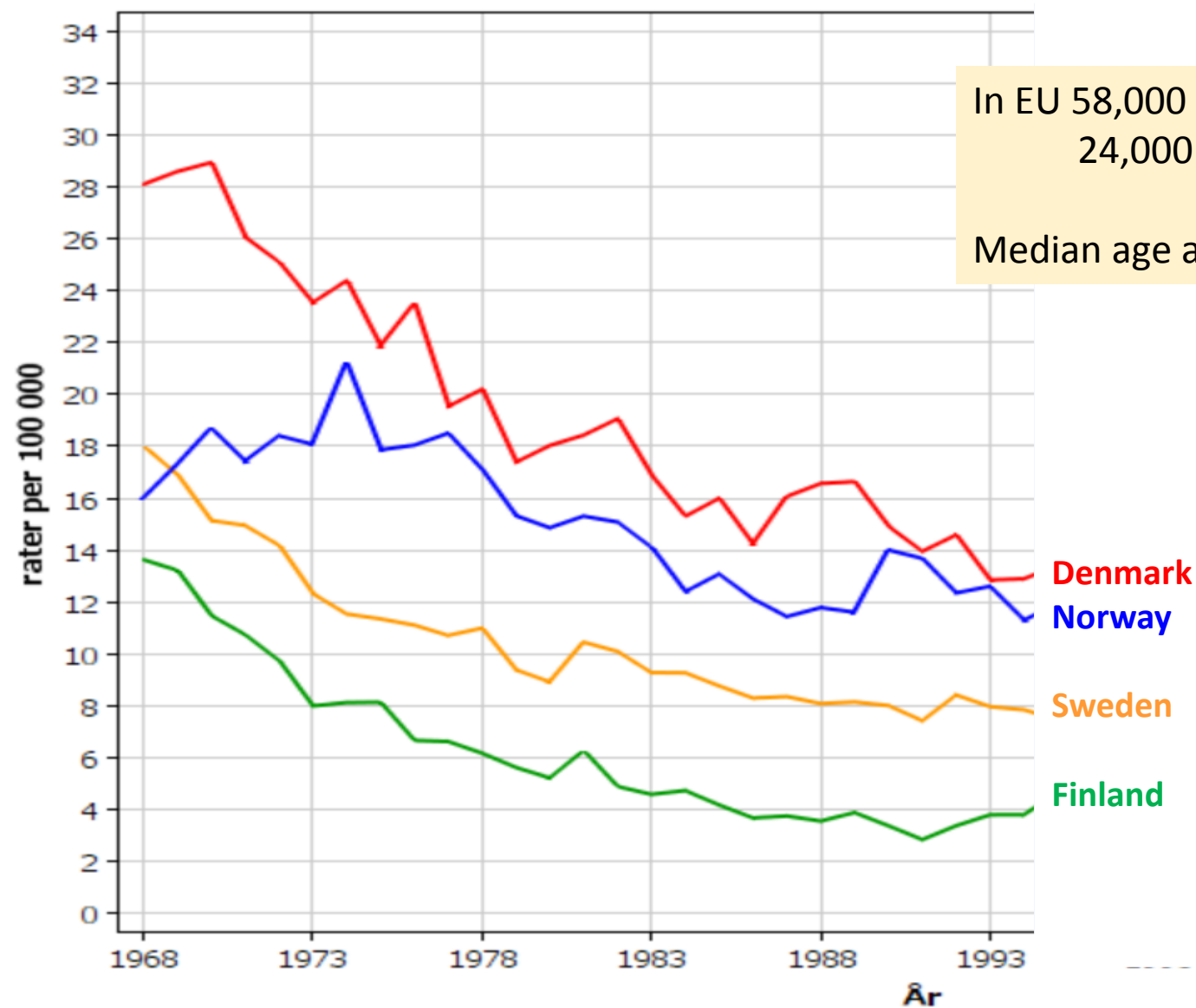


HPV as a necessary – but not sufficient – cause of cervical cancer

Persistence is crucial

Burden of HPV-associated severe precancerous lesions and cancer in Denmark

Incidence of cervical cancer in the Nordic countries (age stand.)



In EU 58,000 new cervical cancers annually
24,000 deaths every year

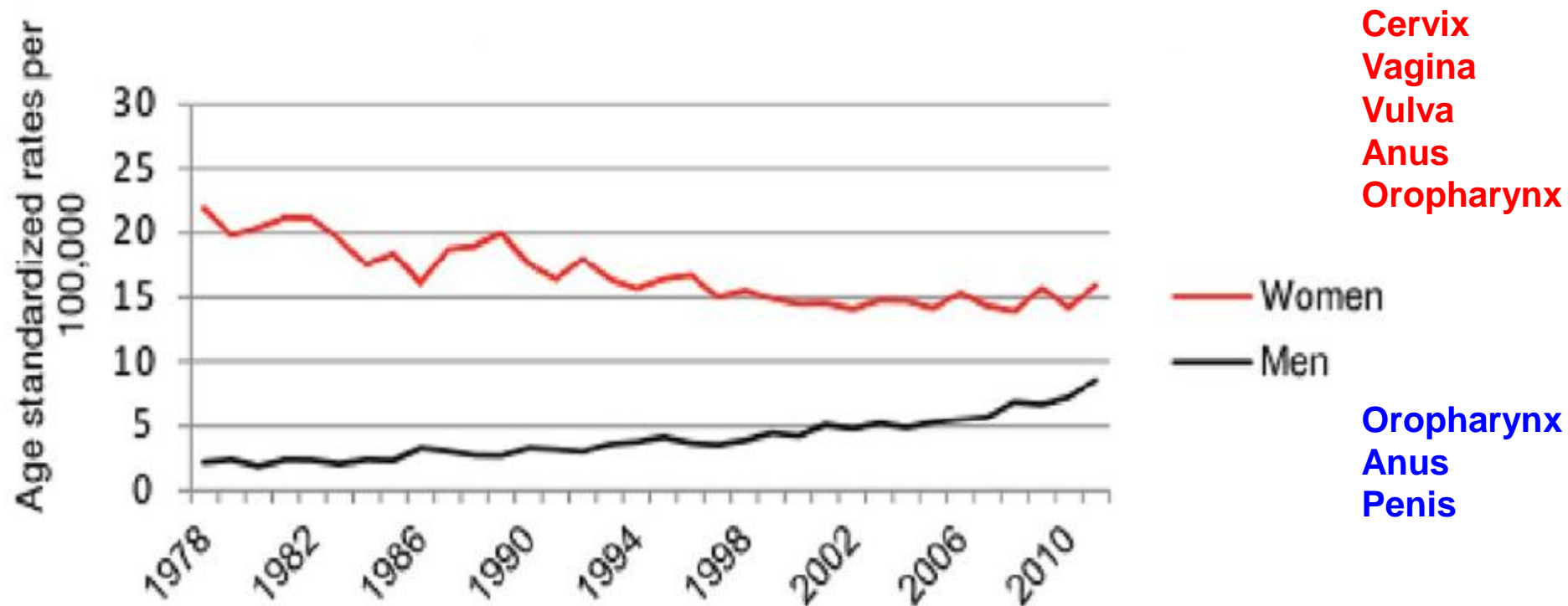
Median age at diagnosis: 40 years

HPV associated cancer and precancerous lesions in Denmark

Average annual number of incident cases		% attributable to HPV
		Any HPV
		(%)
Cancer		
Cervix	379	(100)

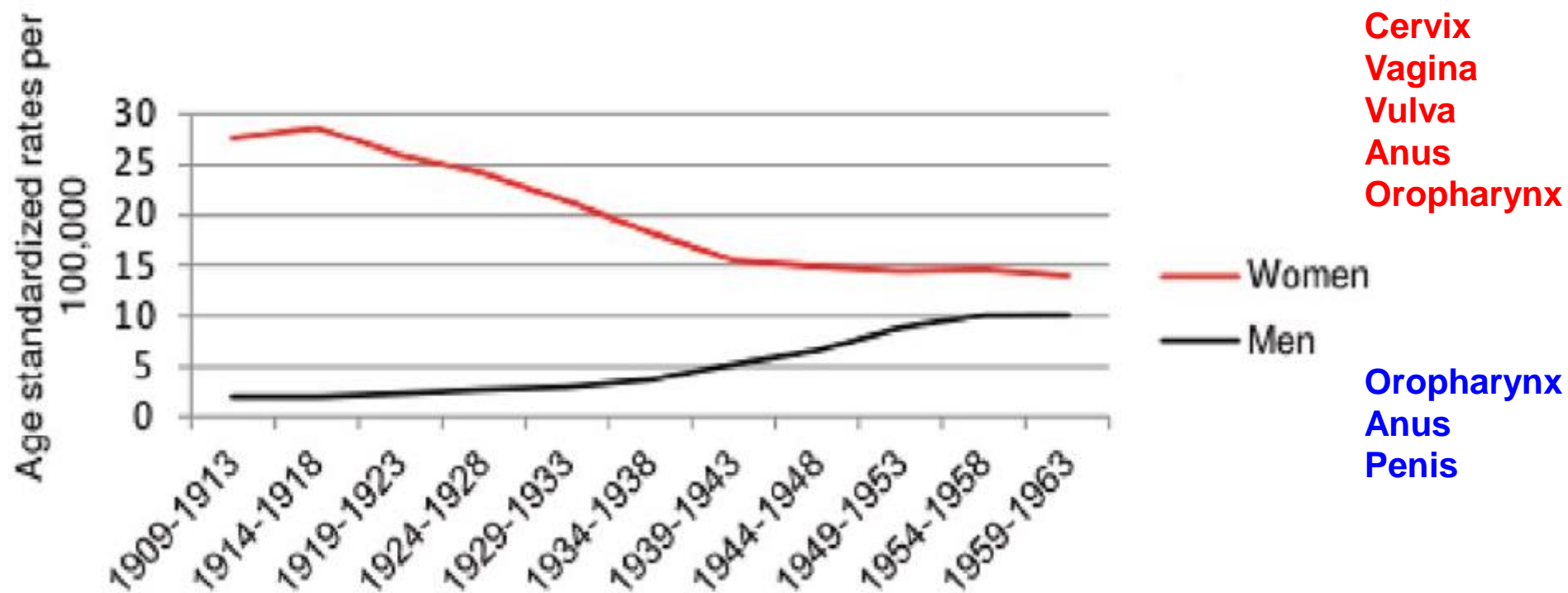
HPV associated cancer in Denmark

by Year of diagnosis

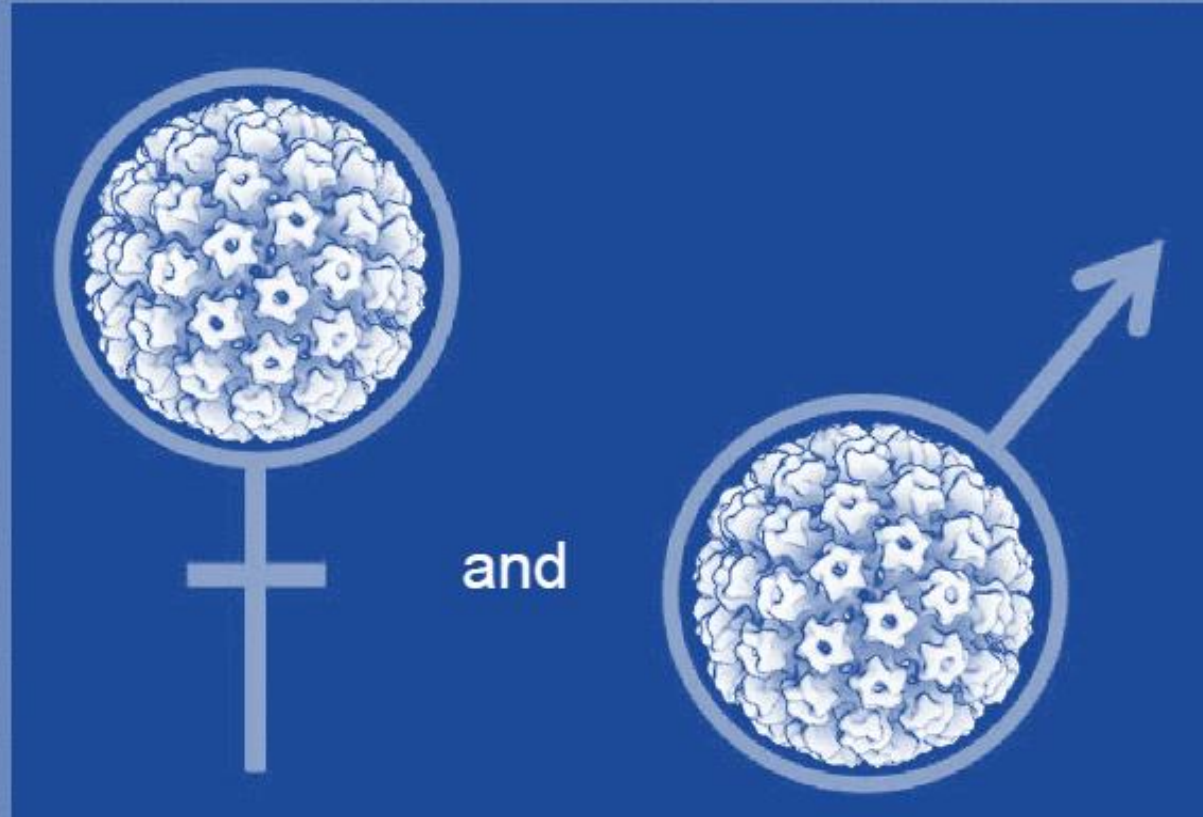


HPV associated cancer in Denmark

by Birth cohort



HPV causes great morbidity in both



.... there is a great potential for prevention

Thank you for the attention