

HPV Epidemiology

Adult Women 27-45 years

Eileen Dunne MD, MPH
Division of STD Prevention, CDC
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CENTERS FOR DISEASE CONTROL AND PREVENTION



Considerations for Policy Decisions HPV Vaccine, Women 27-45 years

- Vaccine efficacy, safety, immunogenicity
- Epidemiology of HPV infection
- Programmatic considerations
- Cost-effectiveness

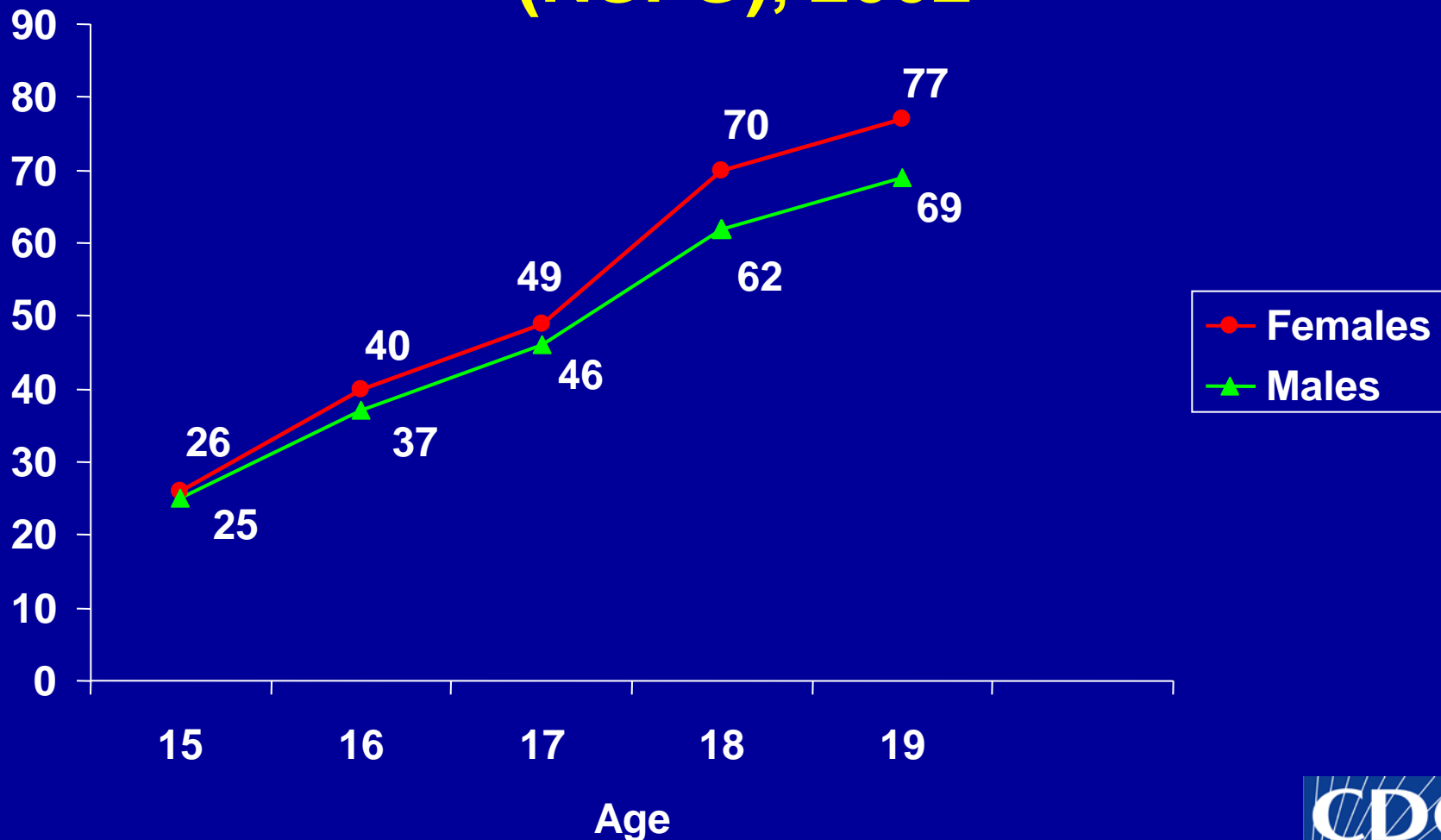
Recommendations for HPV vaccination

- Routine vaccination with either bivalent or quadrivalent HPV vaccine for 11 or 12 year old girls
 - Catch-up vaccination through age 26 years
- Benefit is greatest before sexual debut

<http://www.cdc.gov/vaccines/recs/provisional/downloads/hpv-vac-dec2009-508.pdf>



Adolescents Who Have Had Vaginal Sex, National Survey of Family Growth (NSFG), 2002



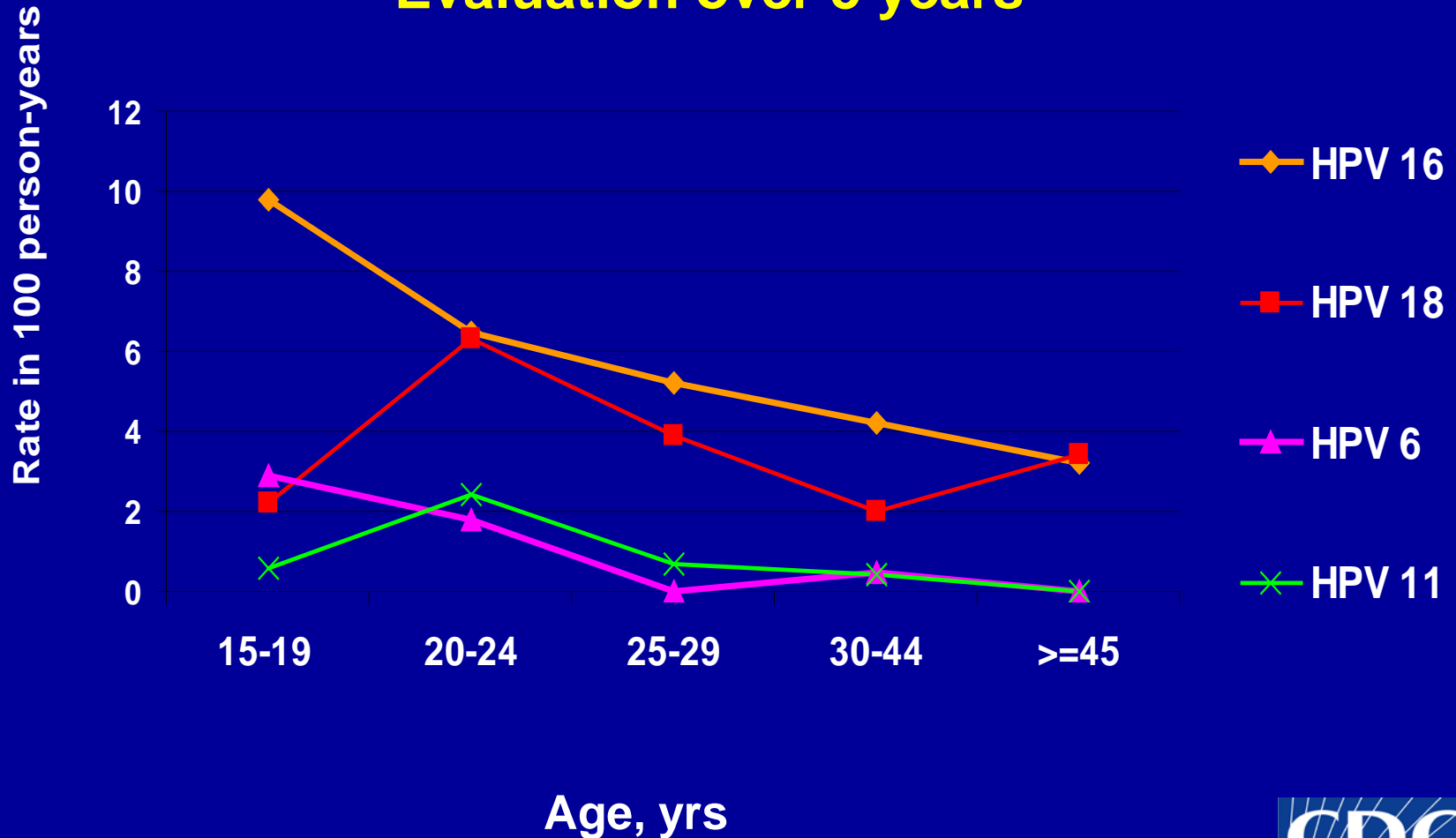
HPV Prevalence in Women

- HPV prevalence peaks in the 20s, and declines with age
- Smaller secondary peaks in prevalence among older women observed outside the US
- A variety of sexual behaviors are risk factors for prevalent and incident infections

Incidence of HPV 6,11,16 or 18 per 100 person years, by age Protocol 019: Placebo Arm

Age Group (years)	Incident Infection Rate (95% CI)
24-29	7.4 (5.90, 9.21)
30-34	3.6 (2.42, 5.05)
35-39	2.4 (1.50, 3.60)
40-45	1.9 (1.15, 2.95)

Incidence of HPV 16, 18, 6 or 11 by Age, Colombia Evaluation over 5 years



What is “Incident” Infection? Adult Women

- In studies of incident infection in adult women:
 - Unclear if these are first infection, reinfection, or reactivation from a previous infection acquired earlier (there may be a contribution of each)
- Evidence for some proportion of incident infections due to transmission from a partner

HPV Infection from a Partner

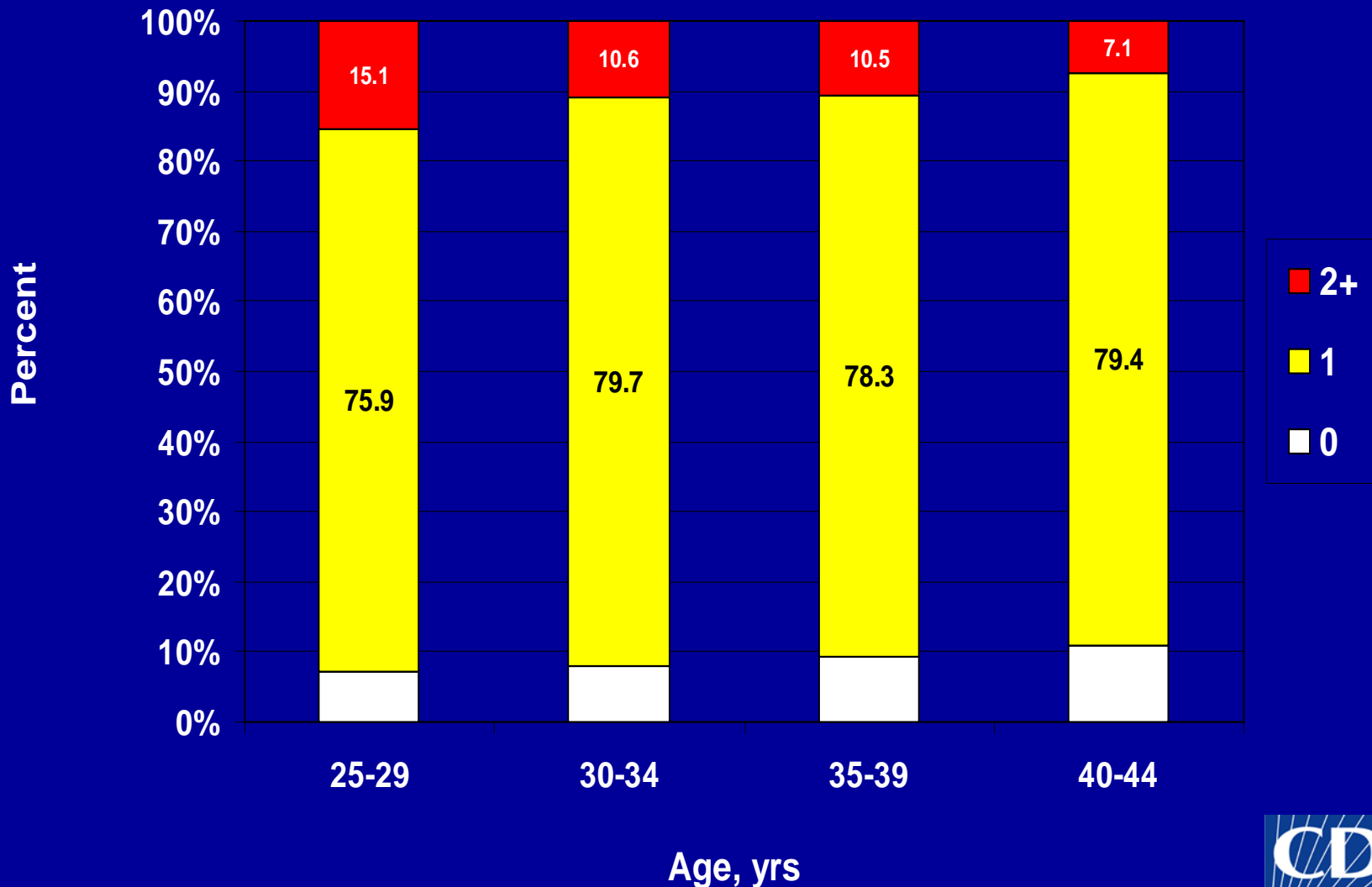
Adult Women

- Sex behavior clearly linked to incident infection in studies of younger women
- Fewer studies of adult women >25 years:
 - Adult women dating online were more likely to have prevalent oncogenic HPV with increasing number of male sex partners, concurrent partnerships, and recent relationship
 - Placebo analysis of quadrivalent HPV vaccine clinical trial

Selected Baseline Characteristics and Risk for Incident Infections, Placebo analysis, Quadrivalent HPV Vaccine

Baseline Characteristic	Number	Incident Infection HPV 6,11,16 &/or 18 (n, %) (N=147)	Age-adjusted HR for incident infection (95% CI)
Lifetime # of sex partners			
1	683	38 (5)	1.0
2-3	517	46 (8)	1.5 (1.0, 2.3)
≥4	476	63 (12)	1.9 (1.3, 2.9)
# New sex partners (last 6 months)			
0	1539	121 (7)	1.0
1	122	19 (14)	1.5 (0.9, 2.4)
2-3	13	7 (35)	5.2 (2.4, 11.1)
≥4	1	0 (0)	0.0 (0.0, 1)
Marital status			
Married, first marriage	727	33 (4)	1.0
Single, never married	265	51 (16)	2.8 (1.8, 4.4)
Remarried	106	6 (5)	1.3 (0.6, 3.2)
Divorced/separated/widowed	121	18 (13)	3.8 (2.2, 6.8)
Living with partner	461	39 (8)	1.5 (0.9, 2.4)

Sex Partners in Past 12 Months Females 25-44 Years, NSFG, 2002



Mosher et al. NCHS report. 2006.



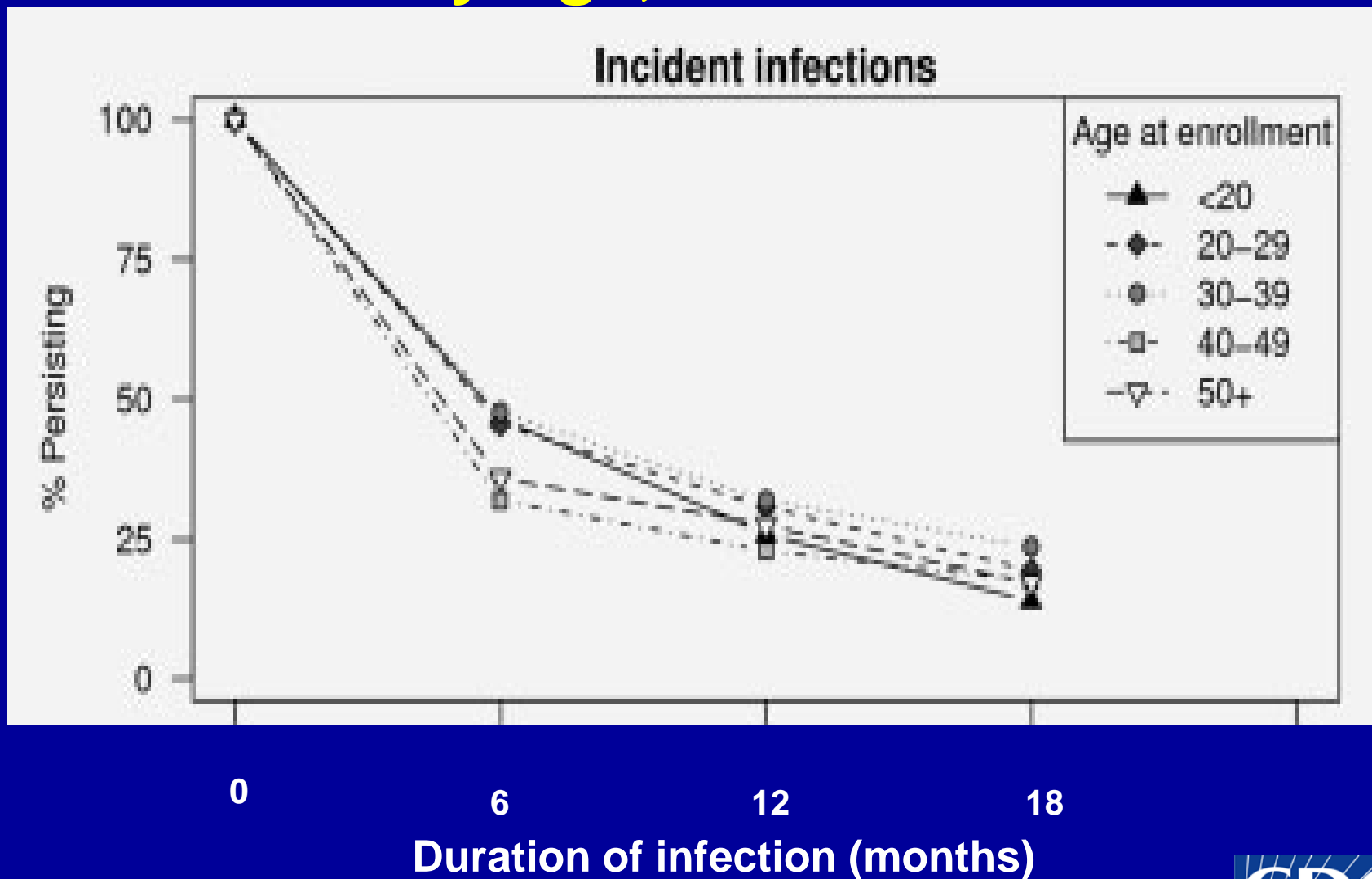
Can We Identify Adult Women Who Would Most Benefit from Vaccine?

- Risk factors for incident infection same as risk factors for baseline prevalent infections
- Programmatic challenges to “targeted” approach, especially using sexual behavior risk factors
- Identifying specific groups of adult women who would most benefit from vaccination not feasible

HPV Natural History

- Questions remain on natural history of incident infections in women over 25 years
 - Is the natural history of incident infection the same in older and younger women?

Duration of Incident Infections by Age, ALTS Trial

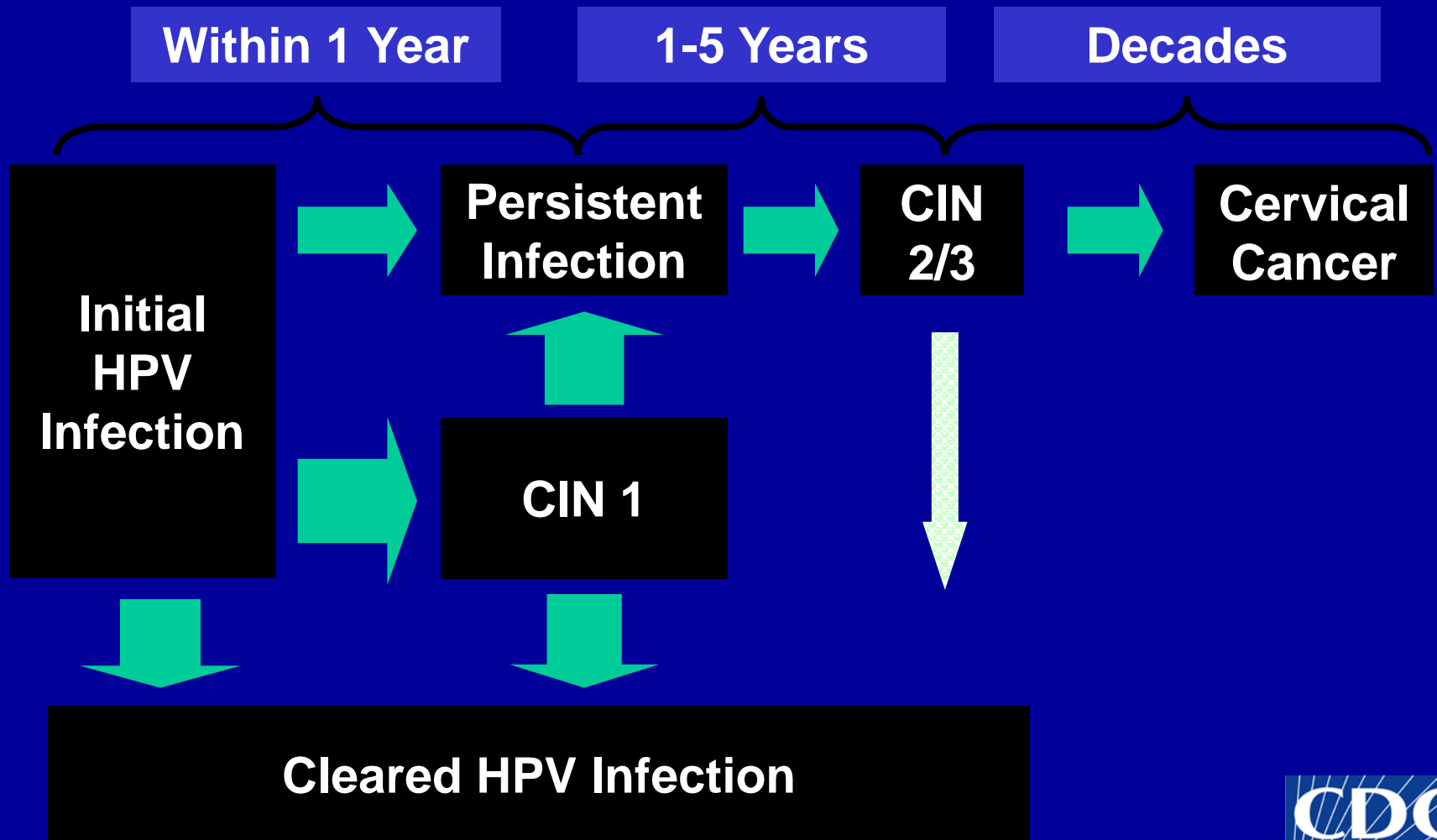


Incident HPV Infection and Development of CIN 2/3

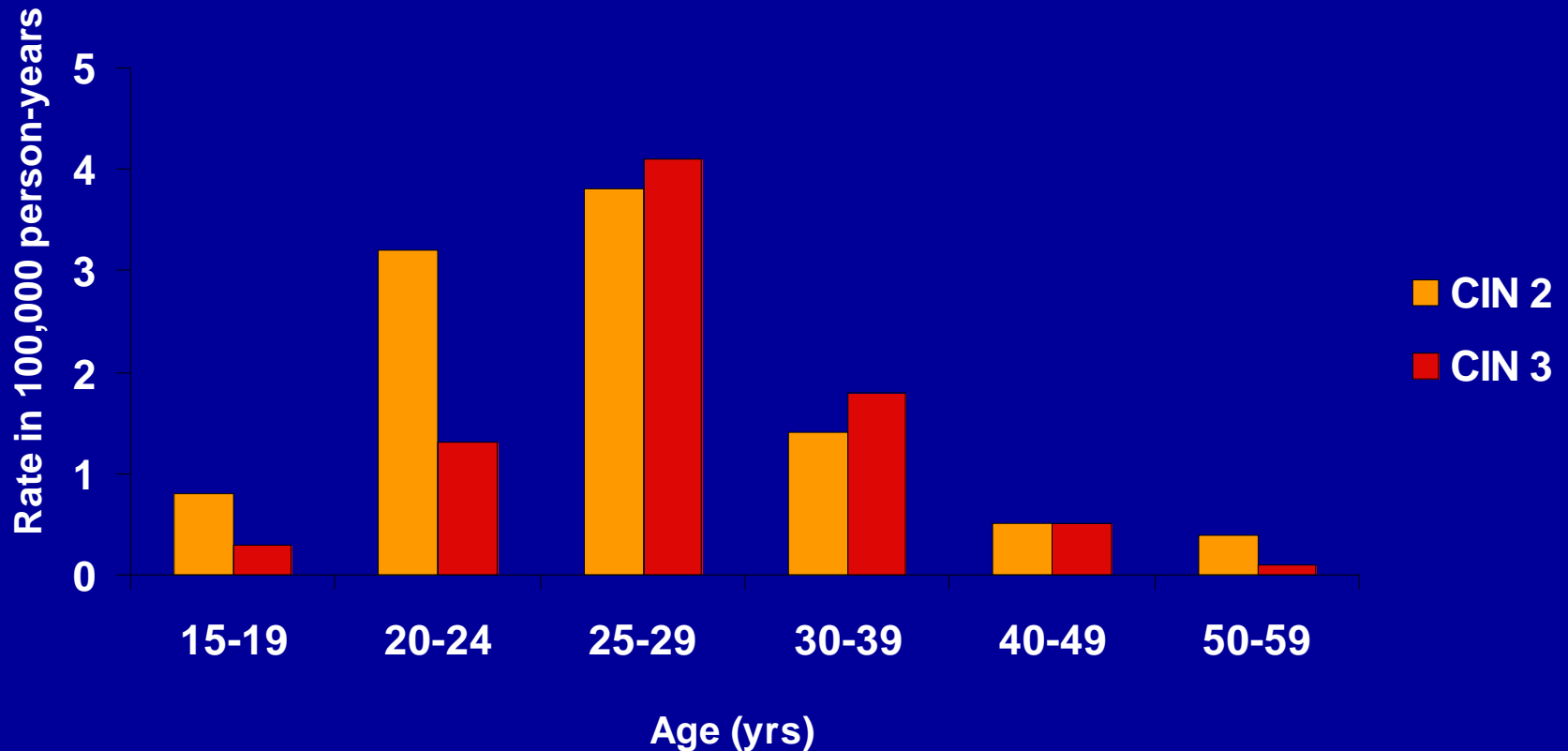
- Study in Guanacaste, Costa Rica evaluated development of CIN 2/3, and CIN3 after incident infection, comparing women by age
 - Older women with incident infection had a similar risk of CIN 2/3 and CIN3 as the younger women

CIN=Cervical Intraepithelial Neoplasia

Background: Natural History Cervical Precancers/Cancers



Cervical Intraepithelial Neoplasia (CIN) 2/3, Health Plan Data, US



Summary

- As women age from their mid 20s
 - HPV prevalence decreases
 - HPV incidence decreases
 - Likelihood of having acquired HPV infection increases
- Disease outcomes (genital warts, CIN 2/3) peak among women in their mid to late 20s, potential benefit of vaccinating women in late 20s to early 40s would be minimal
- Questions on natural history of incident infections in adult women
- Greatest benefit from vaccinating females in early adolescence