
European experience with adolescent immunization

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Adolescent immunization and GIVS

- Commits unprecedented attention to reaching the hard-to-reach;
- Encourages a package of interventions beyond immunization to reduce child morbidity and mortality;
- Promotes data-driven problem solving to improve programme effectiveness;
- Takes immunization beyond infants into other age groups; and
- Anticipates the introduction and widespread use of new vaccines and technologies.

Adolescent immunization

European perspective

Vaccines to be considered:

- Hep B
- Hep A
- Measles, mumps, rubella (MMR)
- Meningococcal
- dT; dTap
- (varicella)
- HPV

Adolescent immunization – HBV vaccine

- 1992 WHA resolution for inclusion of hep B vaccination in national immunization programmes
- 1997 Target year for full implementation at global level
- Aim:
 - ↓ incidence of acute hep B infection
 - ↓ carrier rate HBsAg in vaccinated cohorts
 - ↓ hep B related morbidity and mortality (first anti-cancer vaccine)

Adolescent immunization – HBV vaccine

WHO-EURO = at end of 2004

- 44 out of 52 countries have universal hep B immunization programmes (infant/neonatal and/or adolescent/older children)
- No universal programme in UK, Netherlands, Ireland, Iceland and the four Scandinavian countries; targeted (high risk group) vaccination only plus universal/targeted screening of pregnant women

Adolescent immunization – HBV vaccine

WHO-EURO

- In 1991 four countries with universal programme:
 - Bulgaria, Israel: newborns/infant
 - Spain, Italy: adolescent (12 years old)
 - Spain started adolescent programme in Catalonia in 1991, extended to 10 of 17 regions in 1993 (73-96% coverage) and country-wide in 1997; continues newborn/infant programme started in 1998.

Adolescent immunization – HBV vaccine

- Adolescent/older children programmes in WHO-EURO region
 - 23 of 52 countries have such programme
 - Adolescent cohorts: 10 4 years, mostly 12 years old; 18 countries
 - Older infants: 6 9 years; 5 countries
 - 18 of 23 are combined with infant/neonate programmes
 - 5 of 23 adolescent programme only (Hungary, Croatia, Switzerland) or older child programme only (Malta, Slovenia)

Adolescent immunization – HBV vaccine

- No booster policy in any country in universal adolescent programmes
 - Schedule 0, 1-2, 4-6; paediatric dose
- Booster policy for risk groups in 12 out of 22 countries with data available

Adolescent immunization – HBV vaccine

- Adolescent = 10-19 years (WHO)
11-21 years (USA: AMA; AAP)
- Emphasis on adolescent visit to health care worker at age 11-12 years old for vaccination and other preventive services
 - School based setting
 - Provider office setting

Adolescent immunization – HBV vaccine

- Role of WHO-EURO + collaboration with VHPB and other partners
- Extra impetus from GAVI (11 countries in EURO)

Italy – universal HBV vaccination

Success story (Bonanni P et al. *Vaccine* 2003; 21:685-91; Da Villa G. *Vaccine* 2000; 18: S31-4; Stroffolini T et al. *Vaccine* 1997; 15:583-5)

- First industrialized country to implement in double cohort
 - Infant: 3 doses: 3m, 5m, 11-12m
 - Adolescents: at 12 years, 3 doses with 0, 1, 6m schedule; through school health or district vaccination services (“hygienists”)
- Mandatory (by law of 27.05.91), fully implemented since 1992
- In 12 years 24 generations of immune subjects; universal adolescent programme could be stopped in 2004
- Coverage of 90% in adolescents (more than 95% in infants)

Italy – universal HBV vaccination

Impact of vaccination

- Incidence of acute hep B: between 1994 and 2001: 74% ↓ in 15-19 years old, 82% ↓ in 20-24 years old
- In 2000 (Tuscany): no HBsAg+ and only 0.4% anti-HBc+ in vaccinated cohorts
- At national level: 3.4% HBsAg in 1985 and 0.9% in 1996
- Between 1982 and 1997: proportion of chronic liver disease due to HBV decreased from 48% to 18%
- No threat of mutant viruses seen

Adolescent immunization – Hep A

- Two regions: (1) Puglia in Italy; (2) Catalonia in Spain have universal hep A vaccination of adolescent cohorts (12 year old)
- Hep A vaccine “added” to existing HBV vaccine programme, using a combined hep A+B vaccine
- Catalonia : adolescent programme only
- Puglia : adolescent + childhood programme (at 15-18m, hep A vaccine and MMR)

Adolescent immunization – MMR, Spain

- Introduced universal vaccination of 11 years old as a second dose MMR in 1995
 - 1978 measles vaccine at 9m
 - 1979 rubella vaccination of 11yr girls
 - 1981 MMR vaccine at 15m (95 % coverage), selective rubella maintained
 - 1995 MMR universal vaccination as 2nd dose (boys+girls)
 - 2003 recommendation, to bring 2nd dose forward to age 3 to 5 yrs (measles argument)

Ref: Amela C et al. Eur J Epidemiol, 2003; 18:71-9

Adolescent immunization – MMR, Switzerland

- Too low coverage for MMR ($\pm 60\%$) in 15-24m age group
- “as long as vaccination rates with MMR in the 2nd year of life do not reach 95%, selective immunization of schoolgirls remains a mainstay for the prevention of CRS; ... since the immunity gap may now move to the young adult, and increase the risk for congenital rubella”

Ref: Matter L et al. Eur J Epidemiol, 1997; 13: 61-6

Adolescent immunization – MMR, Scotland

Mumps epidemic (Nov 03 – May 04)

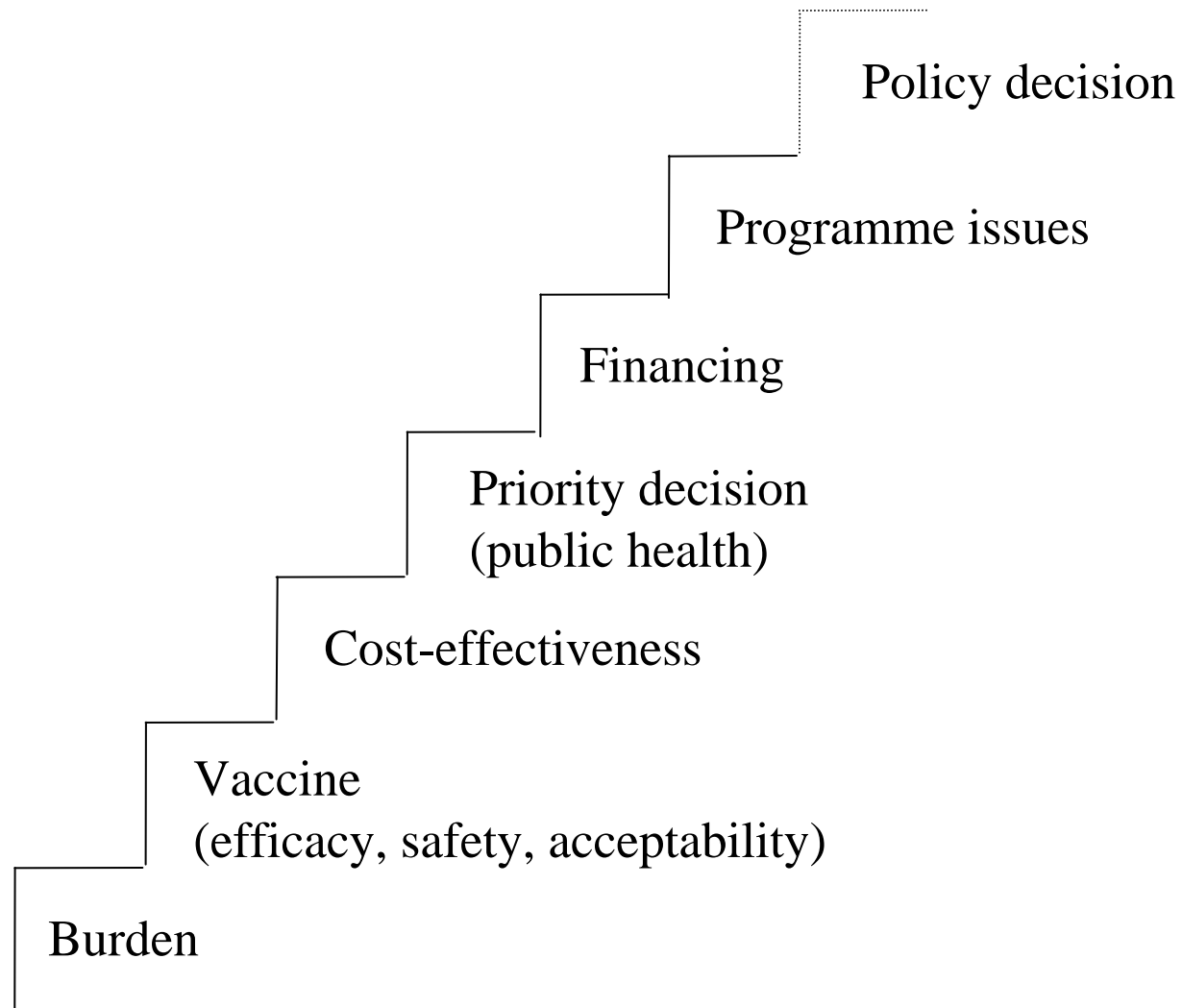
Ref: Doneghy M et al. J Clin Virol, 2006; 35: 121-9

- MMR dose 1 at 13m since 1988
- MMR dose 2 at 3-5yr since 1996
- Recent epidemic in 13-25yrs old, shift in incidence from primary-school children (pre-vaccination pattern) to adolescents/young adults in schools, colleges, workplaces (post-vaccination, too low coverage of 1 dose MMR policy)
- Authors' proposal for short term: opportunistic MMR vaccination to 13-25yrs old who did not receive 2 doses of MMR; for longer term, increase MMR two doses coverage above herd immunity threshold (75-86%)

Adolescent immunization – MMR

- Vaccination with MMR at 11 years in those not having received a second dose before that age (cfr. also USA)
- 2 doses of MMR seems to be a must for controlling the three infections

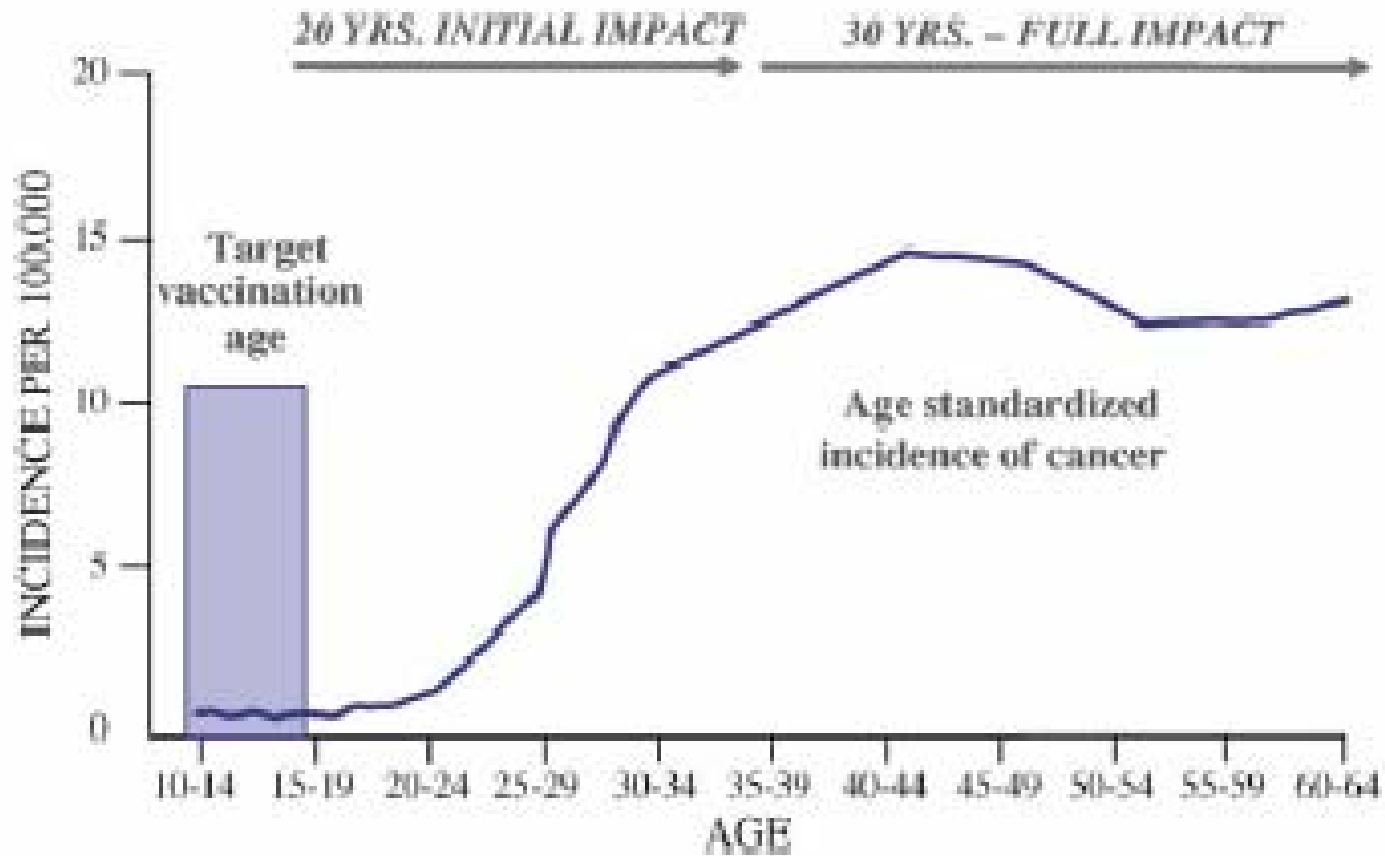
Steps for Decision Making



Adolescent immunization – HPV

- Prevents 70% of cervical cancer (due to HPV-16, HPV-18)
Cross-protection for other high risk genotypes?
- “Cancer prevention vaccine” vs. STI vaccine
- Use this prophylactic vaccine before initiation of sexual activity
- Optimal target population: 9-14yr old females
- Implemented as universal vaccination of one age cohort, e.g. 10, 11, or 12 years old girls
- If catch-up vaccination, priority to be given to age cohort just older than the initially vaccinated one.

Timeline for effect of HPV vaccination on cervical cancer



Adolescent immunization – HPV

“Catch up” vaccination in sexually active adolescents/young women

- Controversial issue,
 - Public health approach: restrict HPV vaccine to cohorts of young adolescent girls
 - Individual approach: sexually active adolescents and young women should not be deprived of potential benefit of vaccine (mainly through private sector)

Adolescent immunization – HPV

Service delivery

- Through the school health system in most European countries
 - Reference to HBV, coverage rates of 70–90% obtained
 - “Topping up” of coverage through private sector (gp/paediatricians)
- Mainly or only through the private sector; results in much lower coverage particularly for 3 dose vaccines; e.g. Germany (less than 30% coverage for HBV vaccine), France and others.

Adolescent immunization – HPV

Service delivery – mandatory vaccination for adolescents?

- USA: Some states have school laws that pupils are vaccinated (HBV, meningo, dTap vaccine); Michigan State introduced already mandatory HPV vaccination for 14-12yrs old.
- Lancet editorial (Oct. 7 2006; 368:1212):
“For effective and long term eradication of HPV, all adolescents must be immunized; EU member states should lead by making the vaccination mandatory for all girls aged 14-12 years”.

THANK YOU