

Update of the universal vaccination programme in Italy

-  **Progress in the prevention and control of hepatitis B in Italy, 12 years after the implementation of universal vaccination.**
-  **Duration of immunity and booster policy to maintain lifelong protection.**

Hepatitis B vaccination in Italy

Historical aspects

1983

- **selective immunisation of people at increased risk of HBV infection**

1991

- **mandatory universal vaccination for infants and 12-years-old adolescents together with mandatory HBsAg screening of pregnant women**
- **vaccination continued to be offered free of charge to high-risk groups**

HBV vaccination

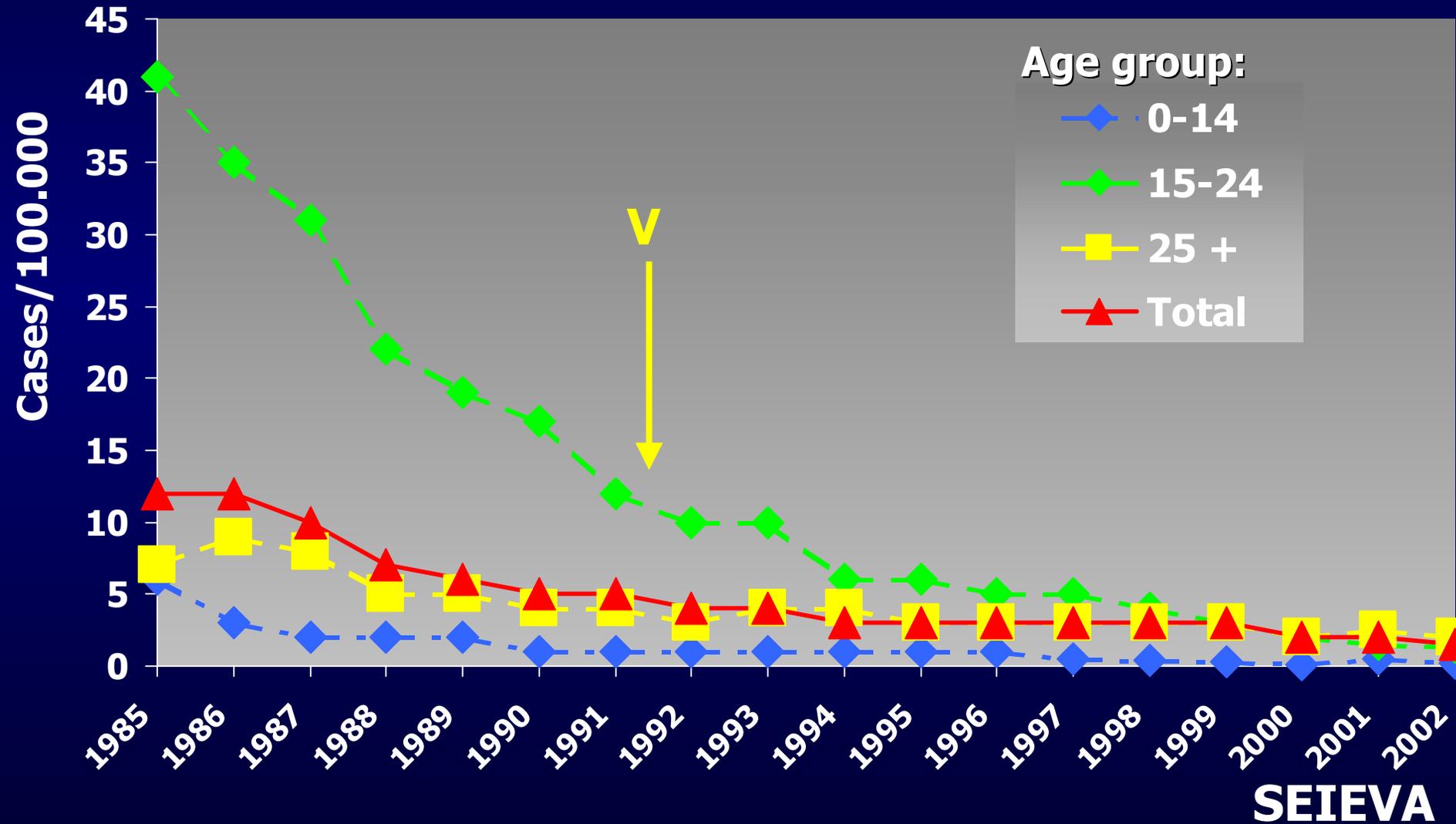
Safety profile (2003)

- **Over than 12 million children have been vaccinated with an outstanding record of safety and efficacy.**
- **Reported adverse reactions are generally mild and confined to symptoms at the site of injection.**
- **Major neurological syndromes (2 cases of GB but not MS) were reported in less than 1 case x 10⁶ doses injected.**

HBV vaccination - Coverage

- Globally, the coverage rate is at least 95% with somewhat lower acceptance in South (~80%) compared to Northern regions (100%).
- Coverage rate among HCWs (~65%) and among household contacts is still insufficient highlighting regional differences between North and South.

Incidence (x 10⁵ inhabitants) of acute hepatitis B in Italy, by age (1985-2002)

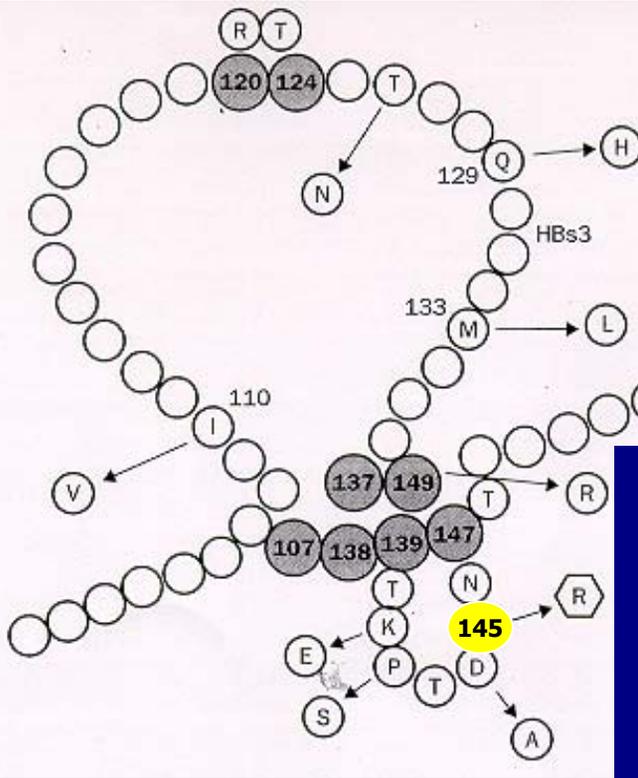


Decline of hepatitis B incidence following the national vaccination program - I

- **During the period 1991-2003 the overall number of new cases of hepatitis B dropped by 80% compared with data for 1985-90 period.**
- **Reduction is even more striking among individuals aged 15-24 years.**
- **No clinically overt hepatitis has been reported so far in vaccine recipients.**

HBsAg mutants

✓ Occasional breakthrough infections due to G145R mutant or to less frequent S-gene mutants (P120S, P127S) have been reported in liver transplant recipients and in children born to HBsAg carrier mothers.



✓ There is no evidence, at present, that S gene mutants may pose a threat to the established program of HB vaccination in Italy.

Decline of hepatitis B prevalence following the national program of vaccination - II

- Serologic studies have recently shown a drop near to zero of HBV markers among children and teenagers, in the last decade.**
- In parallel with the decline of hepatitis B, hepatitis Delta has also declined significantly, in Italy.**

Changing pattern of hepatitis B in Italy

Conclusions

Hepatitis B has progressively declined in the last 20 years as a result of:

✓ ***Social behavioural and demographic changes.***

✓ ***General improvements in the standard of living and hygiene.***

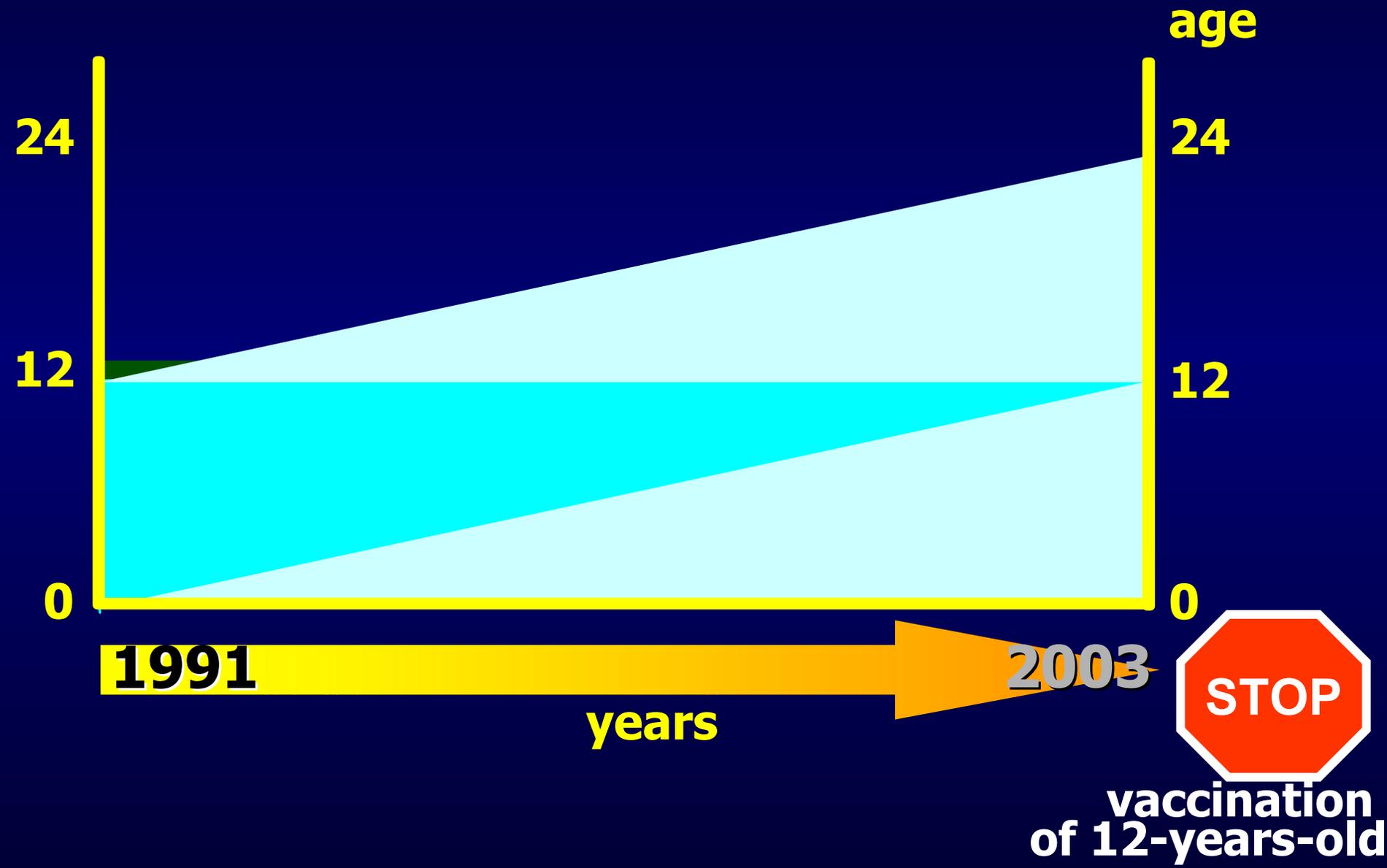
✓ ***Introduction of public health measures such as refinement in blood screening, use of universal precautions in medical setting and implementation of vaccination.***

HBV vaccination in Italy

Future holds

- **Maintaining mandatory vaccination of infants and HBsAg testing of pregnant women.**
- **Catch up immunisation of unvaccinated adolescents.**
- **Increasing vaccination coverage in high risk groups.**
- **Considering the use of booster dose(s).**

Italian strategy for hepatitis B vaccination



Hepatitis B vaccination: persistence of immunity

- **How long can vaccine-induced immunity be expected to last?**
- **Will vaccinated babies maintain immunity until the time when risk behaviour may be expected?**
- **Is there a need for booster vaccination(s) to sustain immunity?**

Study population (1)



1212 children* (50.5%M, 49.5%F)
vaccinated at birth (3, 5, 11m)

Year of vaccination:

1992 (69.9%) 1993 (30.1%)

Mean age (at enrollement):

10.9 years

***North* 30.7% *South* 69.3%**



*** all born to HBsAg - mother**

Study population (2)



521 Italian recruits
vaccinated at 12 years of age

Years of vaccination: 1992-93

Mean age (at enrollment): 21.6 years

North 25.5% South 74.5%

Methodology

2003: testing for anti-HBc and anti-HBs (titre)

anti-HBc+

**HBsAg
HBV DNA
sequencing**

**anti-HBs
 $\leq 10\text{mIU/ml}$**

**anti-HBs
 $> 10\text{mIU/ml}$**

**considered
immune**

administration of 1 booster dose

15 days later: anti-HBs titre

**anti-HBs
 $< 100\text{mIU/ml}$**

**anti-HBs
 $\geq 100\text{mIU/ml}$**

**2 additional
doses of vaccine**

STOP

Conclusions

Preliminary data provide evidence that a strong immunologic memory may persist 11 years after immunization of healthy infants and children with a primary course of hepatitis

B vaccination.

Consequently booster doses of vaccine seem not to be strictly required to maintain life-long protection.

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