HBV vaccine program: A success story

Hepatitis B virus (HBV) infection leads to cirrhosis of the liver and liver cancer as well as acute hepatitis. Field studies carried out in the Kingdom indicate that by 10 years of age, 6.7% of children have HBsAg, and 19.7% have at least one HBV marker (1).

To prevent and control this disease, the Kingdom in October 1989 began is the mandatory immunization of all newborns against HBV and integrated this activity within the national Expanded Program on Immunization (EPI). HBV vaccine is given at birth, 6 weeks and 6 months of age. Pilot studies show that 93% of children less than 1 year old immunized by three doses of HBV vaccine show a titer of 10 IU/L of anti-HBs.(2)

Beginning in 1991, students entering primary school were also included in the program. They also receive three doses, with the second given one month after the first and the third given six months after the first.

Coverage for the first dose of vaccine increased from 87% in January 1990 to 92% in December 1992. Similar progress was made in coverage for the third dose, from 83% in September 1990 to 100% in December 1992.

During the Gulf crisis (January-March 1991), coverage for the first dose dropped below 80% and for the third dose below 70%.

Coverage of first-grade students has remained above 95% for all three doses from the inception of the program. By the end of 1995, these vaccination programs for newborns and schoolchildren should achieve more than 90% coverage of children under 10 with three doses of HBV vaccine. Theoretically, this would prevent 600,000 infections with HBV and 201,000 carriers of HBsAg.

The vaccination coverage maintained during three years shows the striking success of the EPI program. It took more than 10 years to reach comparable levels of coverage for DPT and polio vaccines. These results indicate that the EPI has become mature, a fact that should encourage planners to consider adding other vaccines to the armamentorium of EPI against infectious diseases.

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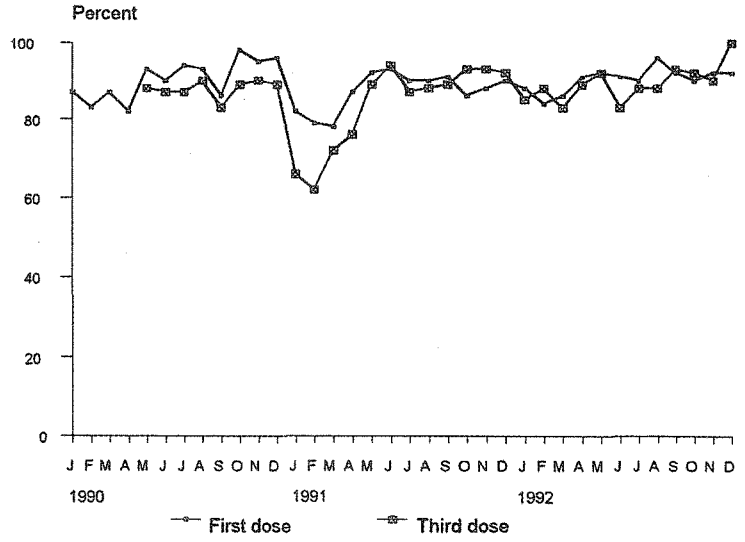

Figure 1: HBV vaccination coverage rates, 1990-1992

Editorial note: HBV infection and its complications are a worldwide health problem. More than 2 billion people have been infected with HBV, and approximately 300 million remain chronically infected with the virus.

More than 70% of the world's population lives in highly endemic areas. The development of hepatitis B vaccines and the demonstration of their safety, immunogenicity and efficacy in the early 1980s have provided an effective tool for the prevention of HBV infection and its consequences.

Interruption of HBV transmission and prevention of the sequelae of chronic HBV infection are the main goals of integrating hepatitis B vaccination program with the EPI in the Kingdom. Comparing the HBV surveillance data from the Ministry of Health for the first six months of 1992 and 1993, there is a 47% increase in number of cases, from 1,227 to 1,805. This may be explained by two factors:

- The program is still a new one, and it covers younger ages (infants and first-grade school children). The reduction in hepatitis B resulting from universal infant vaccination may not become apparent for a number of years. Disease control could be accelerated by vaccinating emerging at-risk populations, such as adolescents and susceptible contacts of chronic HBV carriers (3).
- HBV reporting has been improved because of increased awareness after introduction of the vaccine. The major host factors that affect vaccine immunogenicity are age and immunocompetency. Neonates and children respond superbly; virtually 100% of those vaccinated develop anti-HBs. Adults over 40 respond less well. Immunosuppressed persons may not respond to HBV vaccination and are unlikely to respond even after a second vaccination series (4).

References

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