

Routine Hepatitis B Immunization in India : Cost Effectiveness Needs Reassessment

In their Annotation Miller MA and Kane M¹ have made a cost effectiveness assessment for Hepatitis B immunization in India. They have reckoned the undiscounted cost per year of life gained as US\$ 12 and cost per death averted as US\$ 312. For arriving at these figures they assume vaccine cost at \$ 0.5/dose, 10% wastage, 95% efficacy, 80% coverage and an additional cost of \$ 0.19/dose as administration costs. They assume the vaccine is delivered at the same time as DPT without additional costs except for syringes and needles. They quote figures from Beasley RP, 1988 to suggest that 20-27% carriers will die of cirrhosis or liver cancer at an average age of 45 years instead of living upto the full life expectancy of 66 years by the year 2040. These figures are flawed in as much as they overestimate the benefits and underestimate the costs.

1. Overestimation of Benefits in Terms of Vaccine Efficacy and Underestimation of the Costs of Vaccination.

They assume 95% efficacy in preventing hepatitis B when the vaccine is given with DPT. The data of Tandon *et al*, 1991 suggest that most of the spread of Hepatitis B in India takes place perinatally. Vaccination with Hepatitis B vaccine at birth along with Hepatitis B immune globulin to babies of Hepatitis B carrier mothers is associated with 90 to 95% protection.² There is no data to suggest that a 3-dose course of vaccination beginning at 6 weeks along with routine DPT is likely to have anywhere near 95% efficacy. If the first dose is indeed given at birth, it must be remembered that according to the National Family Health Survey II (1998-99), Government of India, 65% of the mothers deliver at home. Administration of the first dose of the vaccine within 24 hours of birth at their homes to these 65% would cost more than \$0.19. We can presume to give vaccine at birth to the 35% babies born in institutions and if they are completely protected, we can expect an efficacy of 35% rather than 95% at the present administration cost of US\$ 0.19/dose.

2. Overestimation of Benefits in Terms of Cost Per Life Year Saved.

The authors quote figures from Taiwan by Beasley 1988,³ who reported HCC of 494 per 100,000 carrier years in

males. They overlook the observation by the authors, in the same article, that the rate of HCC in women in one third to one fourth that of males although the carrier rate is the same. Thus taken together, in a population made up equally of men and women, the HCC incidence works out to be 320 per 100,000 carrier years. This is nearer to the HCC rate found in Alaska⁴ of 256 and Japan⁵ of 240. If this rate of HCC is accepted, carrier fatality falls to 13% and only 123,000 will die instead of 193,000 to 261,000 used in the calculations. The numbers saved by the vaccination falls to 93,000 instead of 147,000.

In another article on Policy Analysis of Vaccines in the National Immunization Schedule, in Health Economics, Miller MA and McCann L⁶ have suggested proactive analysis of the economic and epidemiological impact of vaccines to hasten their introduction into the national vaccination schedules. Peer reviewed journals must guard against such overzealous promotions.

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