

**PREVALENCE OF POSITIVE HEPATITIS B VIRUS SURFACE ANTIGEN IN TAIWAN:  
20 YEARS AFTER VACCINATION**

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**BACKGROUND:** Chronic Hepatitis B virus (HBV) infection and Hepatocellular Carcinoma are leading health problems in the world and Taiwan. Taiwan health administration has initiated a vaccination program for newborns of mothers of high-risk groups (positive HBeAg) since July 1984, and mass vaccination schedule for all newborns since 1987. The efficacy to decrease the prevalence of positive HBsAg was evaluated 20 years after that policy.

**METHODS:** We analyzed data of medical surveillance for workers (**W**: older than 35 years), entrance health check for students of 7 universities (**U**: >18), 8 senior high schools (**SH**: 15-18), 13 junior high schools (**JH**: 12-15), and 6 elementary schools (**E**: 6-12). Results of HBsAg and HBsAb (Abotts) were available in 30,740 male and 28,157 female cases from 1997 to 2004. They were categorized by birthdates as **I**: birth before 1969 Dec, **II**: 1970-1977, **III**: 1978-1984 Jun, **IV**: 1984Jul-1986, **V**: 1986-1989, and **VI**: after 1990.

**RESULTS:** The positive ratio of HBsAg for male cases were **I**: 17.60%, **II**: 13.15%, **III**: 12.23%, **IV**: 4.35%, **V**: 1.88%, and **VI**: 1.49%. The data for female cases were **I**: 11.18%, **II**: 9.15%, **III**: 6.35%, **IV**: 3.01%, **V**: 1.76%, and **VI**: 1.53%. The trend of positive ratio of HBsAb for male cases were **IV** (65.57%) > **II** + **III** (61.7%) > **VI** (50.30%) > **V** (47.08%), and for female cases were **II** + **III** (73.2%) > **IV** (71.10%) > **VI** (53.74%) > **V** (51.23%). After the mass vaccination since 1987, the ratio of HBsAb (+) declined as students grew up. More cases with borderline titer (HBsAb (±)), and more students without detectable serum HBsAb were also found. The ratio of HBsAb (+) for male students born after 1997 were **E** (54.89%) > **JH** (47.65%) > **SH** (37.41%), and for female students were **E** (57.11%) > **JH** (50.31%) > **SH** (43.45%). The ratio of no detectable serum HBsAb in male students were **E** (38.83%) < **JH** (45.72%) < **SH** (55.87%), and in female students were **E** (35.41%) < **JH** (42.77%) < **SH** (45.85%).

**CONCLUSION:** Hepatitis B virus vaccine inoculation was effective in decreasing HBsAg (+) ratio and preventing chronic hepatitis B. Loss of sex discrepancy also was noted. Lower HbsAb (+) rates and higher HBsAb (±) rates could contribute to the progressive loss of titers of HBsAb after vaccination. More students lost their protective antibodies as they grew up. Booster dose for exposure risk groups may be necessary.

**Keyword:** Hepatitis B Virus Surface Antigen, Hepatitis B Virus Vaccination, Prevalence