

# The sensitivity and predictive value positive of the communicable disease reporting system in Taiwan

Abstract:

The most common problem of a communicable disease reporting system is incompleteness. The degree of under-reporting varies among different diseases. Under-reporting mainly results from the ignorance of law requirement and purposes of reporting by physicians and hospital administration. Under-reporting of communicable diseases has now become a global issue. This problem reflects the insufficient training of physician, especially in recognizing and reporting infectious diseases.

The aims of this study were to (1) estimate the reporting rate of communicable disease, (i.e. sensitivity of reporting system) by comparing CDC communicable disease database with Bureau of National Health Insurance outpatient visit and hospitalization claim databases in 2003 and 2004; and (2) investigate physicians' reporting experiences, attitude toward reporting and reporting requirement by law, factors for not reporting, and demand for information feedback, etc.

The results of this study showed that the report rates for several relatively easy diagnosed diseases were less than 10%. These diseases included chickenpox, measles, rubella, mumps, and rare diphtheria. The report rate for tetanus ranged between 25% and 60%; while the reporting rate for pertussis was fairly complete. For sexually transmitted diseases, the reporting rate ranged between 40 and 47% for syphilis and between 50% and 67% for gonorrhea. The reporting rate for scarlet fever ranged between 60 and 75%. The reporting rates for Japanese encephalitis and dengue fever were both over 100%. The numbers of reporting cases for Japanese encephalitis, dengue fever, malaria, and Lyme diseases were all greater than hospitalized cases. Some of the differences were fairly significant. The numbers of hospitalized cases for severe intestinal infection were also less than reporting numbers. The reporting rate for congenital rubella syndrome was 28%. The reporting number for Hib infection ranged between 66 and 69; while there were only 12 hospitalized cases. One thousand and ninety-three primary doctors returned questionnaires, 950 (86.9%) were males and 143 (13.1%) were females. Four hundred and six doctors (37.2%) answered that they have experiences of diagnosing reportable communicable diseases. Among them, 334 (83.5%) have experiences of reporting communicable diseases. Among those who never reported communicable diseases, 20 (32.8%) doctors answered that the reason for not reporting was protecting patient's privacy. The most common methods for reporting was through fax to local health department (64.5%), while only 14.9% of the respondents used internet to report. Over half of the

respondents (57.0%) answered that the easiest way of reporting was through telephone. Over 70% of the respondents answered that a simplified reporting procedure would increase their willingness to report. Less than 30% of the respondents (28.2%) knew that chickenpox was a reportable disease. Likewise, less than 40% of the subjects knew that tetanus (29.6%), measles (39.7%), and rubella (40.1%) were reportable diseases. Both the uncertainty of disease itself and doctor's unfamiliarity about the disease affected the reporting rate. The attitude toward reporting and knowledge about reporting items were positively correlated. It is almost certain than emerging infectious disease like SARS will continue to threaten our life and test the reliability of the healthcare system.

Dependable communicable disease reporting system is a timely and efficient method to control the spread of disease. Surveillance systems require ongoing maintenance and evaluation if the data that result from them are to be accurately interpreted. As healthcare services and information technology continue to evolve, the possibility exists for numerous changes in conducting public health surveillance, enabling more accurate interpretation of surveillance information for disease control and prevention. The findings for this study suggest that (1) the disease reporting process should be simplified to encourage reporting by doctors; (2) doctor's knowledge about reportable diseases needs to be improved by education program; and (3) the combination of health care insurance claiming system and communicable disease reporting system could be further evaluated to establish a more completed disease reporting system.

**Keyword:** Reportable communicable diseases, Disease reporting, Infectious disease control