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Role of vaccination in preventing typhoid fever: experience from Vietnam

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Background: Improvements in water and sanitation are essential to reducing the burden of many infectious diseases, most notably that of diarrhea and enteric fevers. Vietnam has considerable burden of enteric diseases including typhoid fever. The objective of this study was to retrospectively review epidemiological data on typhoid fever and environmental data that are often considered to be associated with typhoid fever in Vietnam over a period of 10 years from 1991 to 2001 to understand the trend and environmental risk factors of typhoid fever in Vietnam.

Methods: Government of Vietnam collects data on typhoid fever by provinces. This government data was collected as part of the Existing Data Collection study under the Diseases of the Most Impoverished (DOMI) program of the International Vaccine Institute conducted between 1999 and 2007 and was retrospectively analyzed. In addition, the government provincial data on urbanization, water and sanitation status was compared for all provinces against incidence of reported typhoid fever and plotted in scatter diagram for the risk factor analysis. Retrospective data on typhoid vaccine coverage was collected from the National Institute of Hygiene and Epidemiology.

Results: The annual incidence of typhoid fever in Vietnam varied over the first five years increasing from an incidence rate of 12/100,000 in 1991 to over 40/100,000 in 1995 and decreasing during the later five years from 35/100,000 in 1996 to 12/100,000 in 2001. There was seasonal variation with peak incidence from May to August. On the risk factor analysis for typhoid, urbanization, access to clean water, or access to sanitation were not statistically related to typhoid fever incidence.

Conclusion: Based on the review of 10-year typhoid fever incidence data coinciding with the introduction of typhoid fever vaccine in Vietnam, improvement in water and sanitation alone did not appear to be significantly related to the reduction in the incidence of typhoid fever. The Government of Vietnam started typhoid vaccination in high-risk districts from 1997 which have contributed in reduction of typhoid fever in these districts. It is important to complement the preventive efforts with introduction of vaccines in the short to intermediate term to effectively control typhoid fever.

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Outbreaks of mumps, measles and rubella in British Columbia, Canada

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Background: There has been a resurgence of mumps, measles and rubella in many parts of the developed world, particularly among older children and young adults. This is due to these age groups experiencing a decline in natural exposure to these viruses as a result of past successful vaccination programs, and the current lower vaccination uptake in some communities. One factor behind reluctance to vaccination is the lack of awareness about the risk of infection and the seriousness of the disease.

This paper describes three outbreaks initiated by international travel in a country with high quality of health care, but pockets of insufficient vaccination coverage for the MMR vaccine.

Methods: The epidemiology of three distinct outbreaks within the same local health authority between 2010 and 2011 are described in terms of case demographics, immunisation status and setting.

Results: In all three outbreaks, the majority of cases were young adults who were either unimmunised or received only one dose of measles, mumps or rubella vaccine. Following the winter Olympics twenty-one cases of locally-acquired measles were identified with two geographically distinct genotypes (H1 and D8). Second, an outbreak of rubella in a workplace was identified (n=7). The index case had travelled to their country of origin where the disease is still endemic and on their return worked while infectious. Third, an outbreak of mumps occurred among international seasonal workers at a resort community. A total of 108 cases were identified before successful control in the community of origin via targeted immunisation.

Conclusion: These outbreaks confirm the existence of susceptible groups that require additional targeted strategies to achieve ≥95% coverage and thereby increase immunity levels in the population beyond that provided by routine childhood immunization.

Alongside the need for high vaccination coverage, these outbreaks highlight the need to maintain effective disease surveillance that permits timely implementation of outbreak control measures.

In the context of international travel, mass gathering events, immigrants visiting countries of origin and transient foreign workers can all initiate introduction of pathogens that are uncommon to the host country. This compounded by the silent accumulation of susceptible individuals facilitate transmission resulting in community outbreaks.

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