

ASCON IV ABSTRACTS

Cholera Vaccine Trials in Matlab: Summary of the Findings

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Objective: Describe the methodologies and results of the vaccine trials conducted in Matlab since 1963.

Methods: Between 1963 and 1974, five large field trials of parenteral cholera vaccines were conducted in Matlab, Bangladesh. The Matlab field site was established to test cholera vaccines, and its well-organized demographic surveillance system, clinical and laboratory facilities make it ideally suited to this task. The first vaccines tested were parenterally-administered, killed whole-cell *Vibrio cholerae* vaccines of classical and El Tor biotypes and Inaba and Ogawa serotypes. In 1974, a vaccine based on cholera toxoid was tested. The control vaccines used in these trials were typhoid and para-typhoid A or B, or tetanus diphtheria toxoids. The sample sizes in these early trials ranged from 14,000 to 93,000. An oral cholera vaccine containing either a combination of killed whole-cell and the B subunit of cholera toxin, or the killed whole-cell alone, was tested between 1985 and 1990. About 63,000 people received three doses of a cholera vaccine or the placebo, containing *Escherichia coli* K12 strains.

Results: The parenteral vaccines yielded a modest, short-term, and age-specific protection against cholera. Both types of oral vaccines provided 57 percent protection for two years and 50% to 52% protection for three years. The rate of protection was lower among children of less than 5 years and against the El Tor biotype of *V. cholerae*.

Conclusions: Development of a safe and effective cholera vaccine is a major public health goal, particularly in areas where cholera epidemics regularly occur. Since Matlab represents a unique site, many cholera vaccine trials have been conducted during the past three decades. While the recent oral vaccine shows some promise, further research is needed to develop a practical vaccine which is more effective in protecting children.



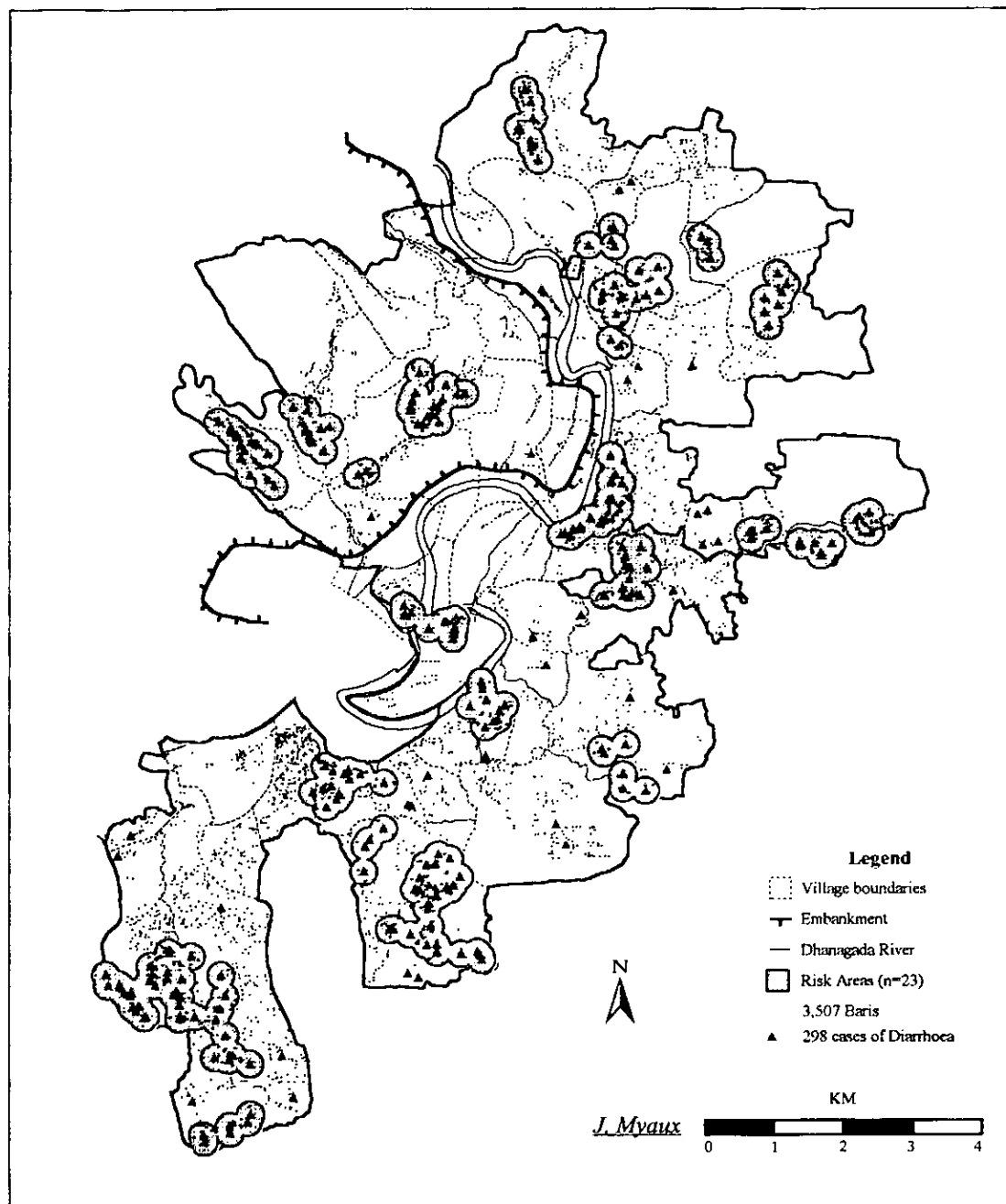
Spatial Distribution of Watery Diarrhoea in Children of Less Than 5 Years from the Rural Community in Bangladesh

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Objective: Present the geographic distribution of possible cholera cases from the community-based data.

Methods: Data were collected from the treatment area of the ICDDR,B's rural field site in Matlab, Bangladesh. In that area, the population receives health and family planning services through an improved health care delivery system, and are routinely monitored. Cases of acute watery diarrhoea in children of less than 5 years were identified during 1989. Among the 14,885 children in the study population, 520 cases were recorded in 298 *baris* by community workers. A nonparametric test for inhomogeneous population was applied on their location to assess the clustering pattern. Socioeconomic, demographic, and hygiene indicators were analyzed to determine the risk factors.

Results: The results showed that the distribution of cases was highly clustered, and by plotting the cases on a computerized map of Matlab, 23 areas with high risk of watery diarrhoea were identified (see map). In these areas, the point prevalence was seven times higher (8.7%) than in the total study area (3.2%). Education status, household density, and the use of sanitary latrines were significant correlated ($p < 0.001$) of high risk in these areas. The difference in diarrhoea-related mortality between high and low risk areas, however, was not statistically significant.



Map. Spatial distribution of acute watery diarrhoea episodes in under five children from Matlab - 1989
localisation of 23 high prevalence areas

Conclusions: The spatial clustering pattern could be useful in designing prospective studies or vaccine trials using smaller samples. Further efforts need to be undertaken to elucidate the specific epidemiological pattern of cholera in Matlab. This study demonstrates the benefits of using computer assisted mapping for descriptive analysis of the spatial component of diseases from the community.