Evaluation of the *Salmonella typhi* Ty 21a Vaccine in Chile

The strain Ty 21a of *Salmonella typhi* has been proven safe and effective in preventing typhoid fever when administered live and orally. In Egypt, three doses of $10^9$ germs administered in gelatin capsules after ingesting 1 g of sodium bicarbonate continued to protect 96 per cent of the children in the third year of follow-up.

A more practical formulation of the vaccine consists of enteric capsules, which do not require the prior administration of bicarbonate. Studies on the immunogenicity of the vaccine, evaluated using the elevation of IgG and IgM antibodies, demonstrated that there was no significant difference between the two preparations.

Based on these studies, a decision was made in Chile to evaluate the effectiveness of the vaccine in enteric capsules and the protection achieved by one and two doses of the vaccine. In June 1982 vaccinations were given to 91,954 schoolchildren from the northern area of Santiago, distributing them at random in three groups, and administering (in a double blind system) one dose of vaccine, two doses of vaccine, and placebos. The group of schoolchildren was submitted to close epidemiological surveillance in order to bacteriologically detect and confirm typhoid fever cases.

**Preliminary Results**

The vaccine was tolerated well by the schoolchildren. As of 30 June 1983 (a year after the vaccination) 259 verified cases of typhoid fever appeared in the group of schoolchildren from the northern area of Santiago. Of these, 109 occurred among the nonvaccinated children. The distribution of cases in the three studies was 67 in the group that received placebo, 52 in the group that received one dose of vaccine, and 31 in the group with two doses of vaccine (Table 1).

**Table 1. Preliminary results of vaccination with the *Salmonella typhi* strain Ty 21a in the northern area of Santiago, Chile, up to 30 June 1983.**

<table>
<thead>
<tr>
<th>Study groups</th>
<th>Population</th>
<th>No. of cases</th>
<th>Rate per 100,000 population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Placebo</td>
<td>31,475</td>
<td>67</td>
<td>212.9</td>
</tr>
<tr>
<td>1 dose vaccine</td>
<td>32,286</td>
<td>52</td>
<td>161.1</td>
</tr>
<tr>
<td>2 dose vaccine</td>
<td>27,258</td>
<td>31</td>
<td>113.7</td>
</tr>
</tbody>
</table>

These results indicate an effectiveness of 24.3 per cent with one dose of vaccine and 46.6 per cent with two doses. Due to this rather unsatisfactory outcome, there is currently under way in the area west of Santiago a new field trial using three doses of the vaccine in enteric capsules and gelatin capsules, and administering bicarbonate in two schedules that are differentiated by the interval between the doses (1, 3, and 5 days, and 1, 21, and 42 days). This test aims at elucidating whether the unsatisfactory result is due to the low number of doses, the enteric formulation, or the high incidence of typhoid fever.

(Source: Report prepared by Drs. M. M. Levine, R. E. Black, and M. L. Clements, Center for the Development of Vaccines, University of Maryland, USA; Dr. Catterine Ferreccio, Coordinating Epidemiologist for the Oral Typhoid Vaccine Campaign, Chile; and Drs. A. Schuster, H. Rodriguez, J. M. Borgoño, and I. Prenzel, Typhoid Fever Commission of Chile, Ministry of Public Health, Chile).

Support for Research Projects on Diarrheal Diseases in 1984

In 1984 funds will be available though PAHO for operational, field-oriented health services research in diarrheal disease control, directed toward solving problems which emerge in the implementation of national primary health care programs. This type of research is conducted in support of national diarrheal disease control activities and is aimed at developing more effective ways of implementing control strategies.

The research is being coordinated by a Regional Scientific Working Group (SWG) composed of public health officials and scientists who are experts in the area of diarrheal disease control. This Group has outlined certain broad priorities for research within the Region of the Americas, which include:
• nutritional consequences of acute diarrhea and nutritional benefits associated with oral rehydration therapy;
• investigation of different approaches for delivery of oral rehydration therapy at the village (community) and family levels;
• evaluation of different methods for preparing and packaging oral rehydration salts (ORS);
• causes and control of chronic diarrhea;
• studies to determine optimal ways of promoting breastfeeding and preparation of safe, locally available weaning foods;
• studies of traditional beliefs and practices regarding diarrheal disease, and evaluation of health education approaches to modify those that are harmful; and,
• investigation of the most effective methods of environmental intervention to reduce the transmission of diarrheal disease agents, including methods of enlisting community participation.

Applicants should first send a one- or two-page letter outlining the proposed project to: Maternal and Child Health, Pan American Health Organization, 525 Twenty-third Street, N.W., Washington, D.C., 20037, USA. A standard application form will then be forwarded if the project is considered to fall within program priorities.

Decisions on the funding of research proposals are the responsibility of the Steering Committee of the Regional Scientific Working Group, which meets twice a year. To be considered by the Steering Committee in 1984, applications should reach PAHO by 3 February 1984 or 13 July 1984.

The program also supports biomedical (applied) research to improve and develop new tools (such as vaccines and drugs) for the prevention and treatment of diarrheal diseases. Persons interested in this type of research should write to: Program Manager, CDD Program, 1211 Geneva 27, Switzerland.

Reports on Meetings and Seminars

PAHO Advisory Committee on Medical Research

The Twenty-second Meeting of the PAHO Advisory Committee on Medical Research (ACMR) was held in Mexico City 7-9 July 1983. The first topic of discussion was health services research in the context of primary health care requirements. It was agreed that services should be organized in groups of programs; health services research should respond to this organizational requirement and define ways of changing services so that this orientation is promoted and strengthened. Reports on the growth and development of health services research in Colombia and Mexico were presented. The Committee recommended that PAHO collect and organize the pertinent information on the subject and give special attention to research on drug use in the health services.

The Committee focused closely on the WHO Collaborating Centers in the Region. The process of designating centers and the criteria followed were outlined. The criteria used included the institution’s scientific standing in terms of quality of work and leadership, and its stability and ability to contribute to WHO program activities. There are currently 167 WHO Collaborating Centers in 13 countries of the Region, 54 of which are located in Latin America and the Caribbean. The centers are oriented toward all of PAHO’s main program areas. Training activities of the Centers are a major contribution to program development in the Region. The Committee felt that new Centers were needed to conduct research in tropical diseases, molecular biology, immunology, and environmental health, and recommended that efforts be made to increase the number of centers in Latin America. Truly operational networks of active collaborating centers should also be established.

PAHO presented to the Committee an outline of its research policy, giving the background of the Organization’s involvement in research, the conceptual framework for the current policy, and the mechanisms for implementing said policy. PAHO’s research policy was stated thus: “to promote the identification of the gaps in knowledge which impede the solution of national health problems and to cooperate with the countries of the Americas in carrying out in a coordinated manner the research necessary to fill those gaps.”

The types of research to be supported and the priorities will result from discussions between the technical programs at PAHO and national health researchers. However, research will, in general, fall into those cate-