

A Survey to Assess Potential Disease Hazards Along Proposed Sea Level Canal Routes in Panamá and Colombia

VII. Survey for Salmonella Antibodies in Man

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A previous report described the results of a bacteriological survey for enterobacterial pathogens among personnel conducting engineering feasibility studies for a proposed sea-level canal in a remote region of eastern Panamá.¹ The proposed canal route through this region is known as Route 17. Indigenous residents, both Indians and non-Indians of this region, employed as support personnel and laborers for the Canal project, were similarly studied. This led to an estimate of the prevalence, variety, and relative frequency of the Enterobacteriaceae associated with diarrheal disease in this section of the country and measured the potential for enteric infections in foreign individuals who entered the region.

The present communication is concerned with the prevalence of agglutinating antibodies to the more common salmonellae in the sera of US citizens and local Panamanian personnel hired for the canal feasibility studies in Darién.

Methods

Field Procedures. This investigation took place in Santa Fé, Darién Province, Route 17 Base Camp for the Atlantic-Pacific Interocceanic Canal Study Commission (A-PICSC), where feasibility studies for a possible sea-level canal in eastern Panamá were conducted, and in six subcamp sites throughout this region where personnel worked and lived while away from the base camp at Santa Fé. Detailed characteristics of the base camp, the living conditions of the personnel, and other pertinent information have been described previously.

The plan of study was to determine the presence of *Salmonella* antibodies and immunoagglutinin change, either in number or titer, in non-indigenous individuals engaged in the canal feasibility studies, before entering the route area, at three to four-month intervals while there, during any illness, and at termination of the work.

In addition, locally hired personnel, Indian and non-Indian residents of the Darién Province, and, where possible, some other persons not employed but living along Route 17, were to be similarly examined. The last two groups were thought of special interest and represented an excellent source of information on the *Salmonella* groups indigenous to the area.

Survey sera were collected from March 1966 through February 1968. The blood specimens were obtained from each individual by venipuncture and held for four hours at room temperature to permit the formation of a clot. The tubes were then refrigerated at 4°C. Once or twice a week

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From the Gorgas Memorial Laboratory, Panamá, Republic of Panamá.

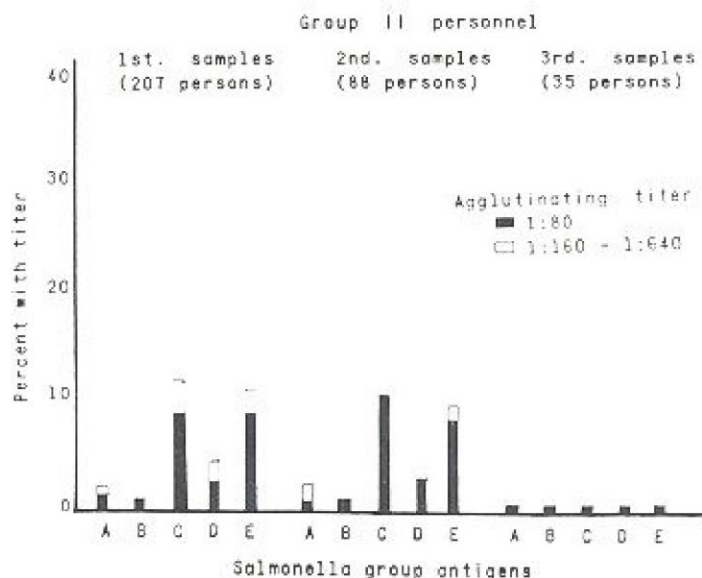
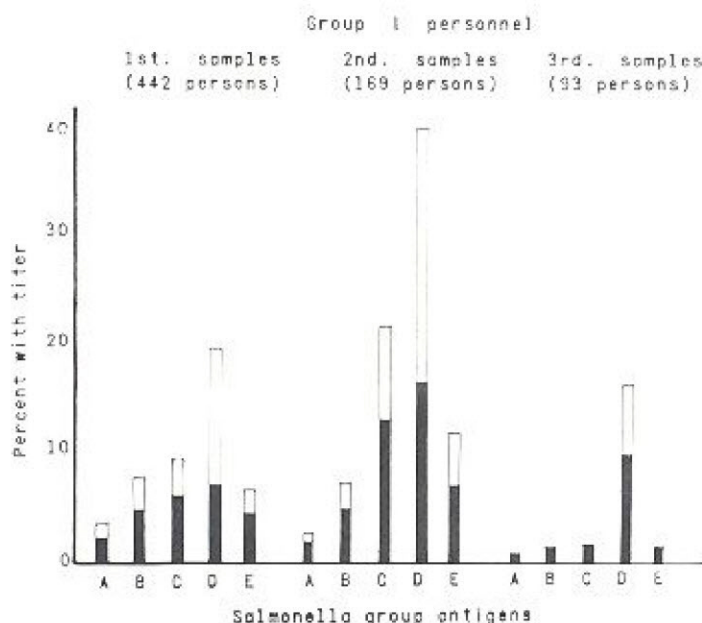


Fig. 1. Distribution of antibodies at titers of $\geq 1:80$ to *Salmonella* group antigens in unpaired sera collected from A-PICSC personnel.

the clotted specimens were sent by air to the Gorgas Memorial Laboratory in Panamá City where the sera were separated from the blood upon arrival. All sera were placed in sterile tubes and kept frozen until ready for serological testing.

Individual serum samples were grouped into three cate-

