

PRELIMINARY STUDIES IN A RURAL STUDY VILLAGE TO DEFINE
THE ETIOLOGY, EPIDEMIOLOGY, AND PATHOGENESIS
OF ENTERIC PATHOGENS

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OBJECTIVE : To define the prevalence of various enteric pathogens in a rural community, their sources in the community, and their subsequent spread to humans. Once this has been established the role of various host characteristics e.g. CFA in tox+ *E. coli*, in causing disease will be evaluated.

METHODS : Methods used in this study have been previously described (1).

RESULTS :

1. A rural laboratory in Soongnern has been established, and the logistics of collecting, transporting, and processing specimens has been determined.

2. A seroepidemiological survey of the Soongnern community has been drawn, Figure 1. Antibodies to rotavirus have been determined and specimens are presently being tested for antibodies to LT, and Norwalk agent, and will hopefully be tested for antibodies to *C. jejuni/coli* and CFAT.

3. The prevalence of tox+ *E. coli*, *Salmonella*, *Shigella*, *Aeromonas hydrophilia*, and *Plesiomonas shigelloides* has been determined in well individuals less than two years of age, Table 1, and is being determined for children 5-10 years and adults. A comparison of the extent of antimicrobial resistance of *E. coli* from children under two years of age in Bangkok and Soongnern has been determined, Table 2.

4. The etiology of diarrhea in patients seen at the hospital over a 5 week period has been partially completed, Table 3. One hundred and two children and adults were studied and paired sera were collected from over 80 percent. Testing of these specimens is in progress.

5. A pilot study of diarrhea not severe enough to bring patients to the hospital collecting specimens from a small number of patients in three villages has been completed, Table 4.

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6. Environmental sources water, flies, food, and animals are in the process of being screened for enteric pathogens, Table 5.

This study is longitudinal and still in progress. No conclusions have been drawn at this time.

REFERENCE :

1. AFRIMS Annual Progress Report, October 1978-September 1979, pp. 3-5.

Figure 1.

SOONG NERN

ANTIBODIES TO SA-II VIRUS BY CF TEST AT $\geq 1:4$

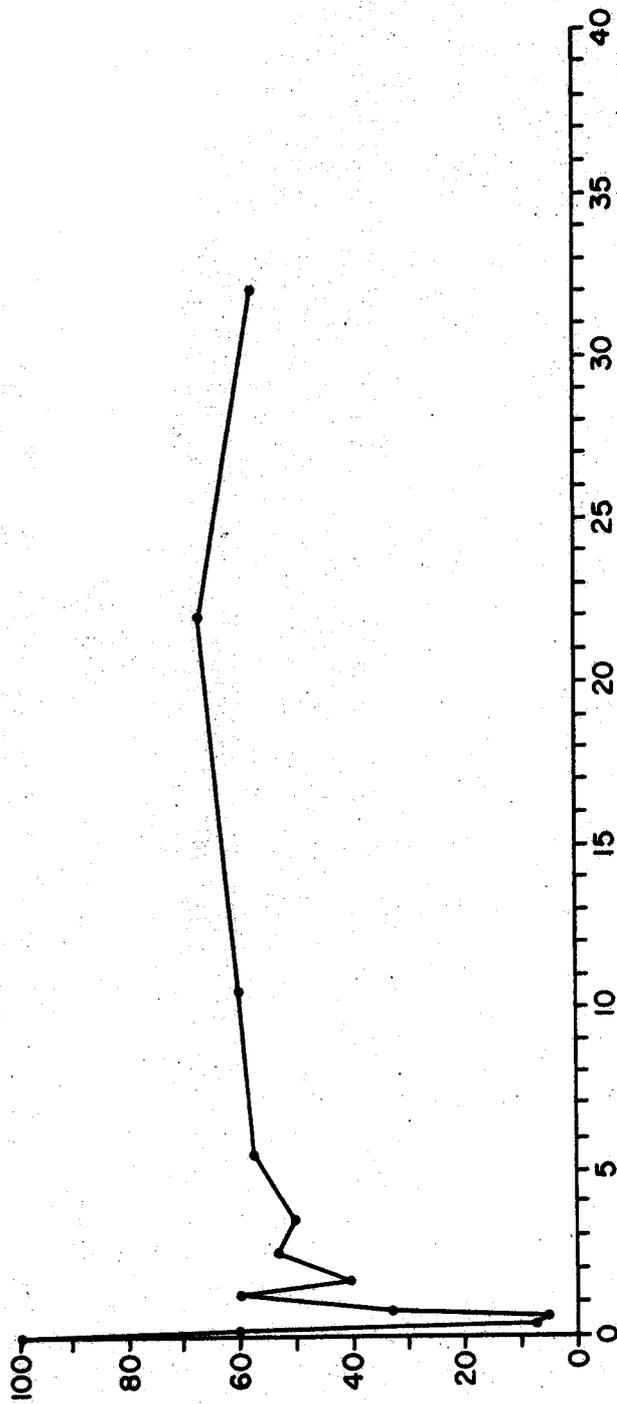


Table 1. Isolation of Enteric Pathogens in 101 Children without Diarrhea under two years of age in Soongnern

<u>Enteric Pathogen</u>	<u>No. of patients infected</u>
LT+ST-	8 (8%)
LT-ST+	4 (4%)
Tox+ <i>E. coli</i>	12 (12%)
<i>Salmonella</i> B	2 (2%)
<i>Salmonella</i> D ₁	1 (1%)
<i>A. hydrophilia</i>	8 (8%)
<i>P. shigelloides</i>	3 (3%)

Percent Resistance of Pathogens

	Ap	Cf	Cm	Do	Gm	Km	Nm	Sm	Su	SXT	Tc
LT+ST- <i>E. coli</i> (23)	13	0	30	52	0	0	0	52	74	0	52
LT-ST+ <i>E. coli</i> (16)	12	0	100	100	0	12	12	64	64	0	100
Total tox+ <i>E. coli</i> (39)	10	0	59	74	0	5	5	72	82	0	74
<i>Salmonella</i> B (2)	0	0	50	0	0	0	0	50	0	0	0
<i>Salmonella</i> D ₁ (1)	0	0	0	0	0	0	0	0	100	0	0
<i>A. hydrophilia</i> (8)	87	100	0	0	0	0	0	0	0	0*	0
<i>P. shigelloides</i> (3)	67	0	0	0	0	100	100	100	100	0	0

* 75% resistant to trimethoprim alone

Table 2. Percent Resistance to Antibiotics in *E. coli* isolated from 100 Children under two years of age in Bangkok and 100 Children in Soongnern

<u>Antibiotic</u>	<u>Percent Resistance*</u>		<u>P</u>
	<u>Soongnern</u>	<u>Bangkok</u>	
Ampicillin	42	57	p < 0.001
Cefalothin	4	29	p < 0.001
Chloramphenicol	51	66	p < 0.001
Doxycycline	42	NT	NT
Gentamicin	0	0	NT
Kanamycin	15	27	p < 0.001
Neomycin	15	21	p < 0.005
Streptomycin	52	71	p < 0.001
Sulfasoxizole	64	71	p < 0.005
Trimethoprim/sulfisoxazole	2	3	NS
Tetracycline	66	59	p < 0.005

* Calculated by testing five *E. coli* per child

Table 3. Enteric Pathogens Isolated from 102 Adults and Children with Diarrhea seen at Soongnern Hospital June 24 - July 31, 1980

Children 0-2 years (N = 30)

<i>A. hydrophilia</i>	6 (20%)
<i>P. shigelloides</i>	4 (13%)
<i>S. flexneri</i>	1 (3%)
<i>S. sonnei</i>	1 (3%)
<i>C. jejuni/coli</i>	1 (3%)

Children 2-10 years (N = 7)

<i>A. hydrophilia</i>	1 (14%)
<i>P. shigelloides</i>	3 (43%)
<i>S. flexneri</i>	1 (14%)
<i>S. sonnei</i>	1 (14%)

Children 10-20 years (N = 9)

<i>A. hydrophilia</i>	2 (22%)
<i>P. shigelloides</i>	3 (33%)
<i>S. flexneri</i>	2 (22%)

Adults (N = 56)

<i>A. hydrophilia</i>	19 (34%)
<i>P. shigelloides</i>	20 (36%)
<i>S. flexneri</i>	2 (4%)
<i>S. boydii</i>	3 (5%)
<i>S. sonnei</i>	1 (2%)
<i>S. dysenteriae</i>	1 (2%)
<i>V. parahaemolyticus</i>	11 (20%)
<i>V. alginolyticus</i>	1 (2%)
NAG I	3 (5%)
<i>Salmonella</i> B	1 (2%)
<i>Salmonella</i> E ₂	1 (2%)

Ten *E. coli* were selected from each culture and are being tested for LT and ST. Stools are being screened by ELISA for rotavirus and paired sera are being tested for rises in titers of antibodies to SA-11 virus (rotavirus) and Norwalk agent.

Table 4. Enteric Pathogens Isolated from 12 Children in Three Villages in Soongnern

<i>S. flexneri</i>	3 (25%)
<i>S. sonnei</i>	1 (8%)
<i>A. hydrophilia</i>	1 (8%)
<i>P. shigelloides</i>	1 (8%)

Table 5. Search for Enteric Pathogens in Environmental Sources in Soongnern

Water (N = 24 separate specimens*)

<i>A. hydrophilia</i>	17 (71%)
<i>P. shigelloides</i>	3 (12%)
NAG I	9 (37%)
NAG V	2 (8%)
<i>V. algonoliticus</i>	1 (4%)

* Collected by placing Moore swabs in klong's adjacent to homes for 24-48 hours

Flies (24 pools⁺)

<i>S. flexneri</i>	2 (8%)
NAG I	1 (4%)
<i>A. hydrophilia</i>	1 (4%)

+ Flies were trapped with nets and 2-5 flies cultured per pool

Twenty samples of food prepared in the house and 20 animals i.e. cows and pigs in the area have also been cultured. Culture results are pending.