Preliminary Report

Peace Corps Health Experiences Abroad

HARRY Y. SPENCE, M.D., M.P.H., JOHN W. CASHMAN, M.D., and JOSEPH A. GALLAGHER, M.D.

PEACE CORPS activities abroad present a unique opportunity to observe and evaluate the health experiences of thousands of young Americans living in a wide variety of environmental settings.

The legislation under which the Peace Corps operates requires the U.S. Government to provide all necessary and appropriate health care for its volunteers, and the Public Health Service has joined with the Corps to provide this service. At present 44 Public Health Service Officers are assigned to the Corps: 7 are on the staff of the Medical Program Division in Washington and 37 are serving abroad.

Volunteers, medically qualified before acceptance, are given a 10-week training course in the United States before assuming their assignments abroad. The course includes health and hygiene instruction which is tailored to the areas where the volunteers are to be sent. It also prepares them for psychological stresses in adjusting to new and strange situations and environments.

Each host country is surveyed with regard to its medical facilities, disease risks, and environmental hazards before the volunteers arrive. Usually the Corps physician is assigned to a country before project work begins in order to expedite health arrangements, including living conditions, for the volunteers.

The Corps physician in the field is primarily responible for the health of his volunteer contingent. He makes the best arrangements possible for their medical care (including evacuation to the United States if necessary), and devotes much time to preventive medical activities.

The data presented in this preliminary report, covering the first 19 months of activities abroad (September 1, 1961, through March 31, 1963), have been compiled from the reports of physicians concerning their volunteer contingents. The validity of the data is subject to the same limitations as other such information derived from a composite of medical reports. Morbidity of all diseases is certainly underreported, but morbidity of serious illnesses probably approaches totality. Accuracy of diagnosis is a variable in certain disease categories; however, the data reflect a relatively genuine picture of illnesses and injuries experienced by the volunteers.

The wide geographic distribution of Peace Corps activities is evidenced by its 108 projects in 37 countries. As of December 31, 1962, 3,488 volunteers were abroad. From January 1 to March 31, 1963, 638 additional volunteers were sent to foreign countries.

The average age of the volunteer is 25 years, although the age limit for Peace Corps service is 18 or older. The all-disease incidence (table 1) is essentially a measure of acute disease occurring in the 20- to 29-year-old age group. Serious or incapacitating illness in a volunteer is cause for his medical evacuation, hence such a patient is not included in further field reports.

The Near East and South Asia region manifests a disease incidence considerably above that of any other region. The explanation for this high incidence rate will have to await further investigation. Another phenomenon is the

The authors are with the Medical Program Division of the Peace Corps, Washington, D.C.

consistently greater disease incidence occurring among the women volunteers in all regions (fig. 1).

Gastroenteritis plays an important role in the high incidence of disease among the overseas volunteers. The cases of gastroenteritis combined with those of dysentery (including amebiasis) approximate one-third of the incidence of all disease. In the Far East region, these acute gastrointestinal diseases represent

Table 1. Worldwide incidence of disease and injury [1] among Peace Corps volunteers per 1,000 man-years, September 1, 1961–December 31, 1962

Disease or injury	Male		Female		Both	
	Reported cases	Incidence	Reported cases	Incidence	Reported cases	Incidence
Gastroenteritis	413	361	261	407	674	377
Upper respiratory infection	349	305	238	371	587	328
Skin disease [2]	181	158	110	172	291	163
Dysentery [3]	210	183	113	176	323	181
Injury	154	134	73	114	227	127
Parasitic disease	133	116	57	89	190	106
Dermatophytosis	105	91	44	68	149	83
Influenza	73	63	40	62	113	63
Other diseases	531	464	413	643	944	527
Special diseases:						
Amebiasis	78	68	28	43	106	59
Infectious hepatitis	24	21	5	8	29	16
Emotional disorders	29	25	20	31	49	27
Total	2,280	1,989	1,402	2,184	3,682	2,057
Cumulative man-years	1,146.3		641.5		1,788.8	

[1] Based on physicians' reports. [2] Other than dermatophytosis. [3] Other than gastroenteritis.

Figure 1. All-disease incidence per 1,000 man-years among Peace Corps volunteers during 16 months abroad, by region, September 1, 1961, through December 31, 1962

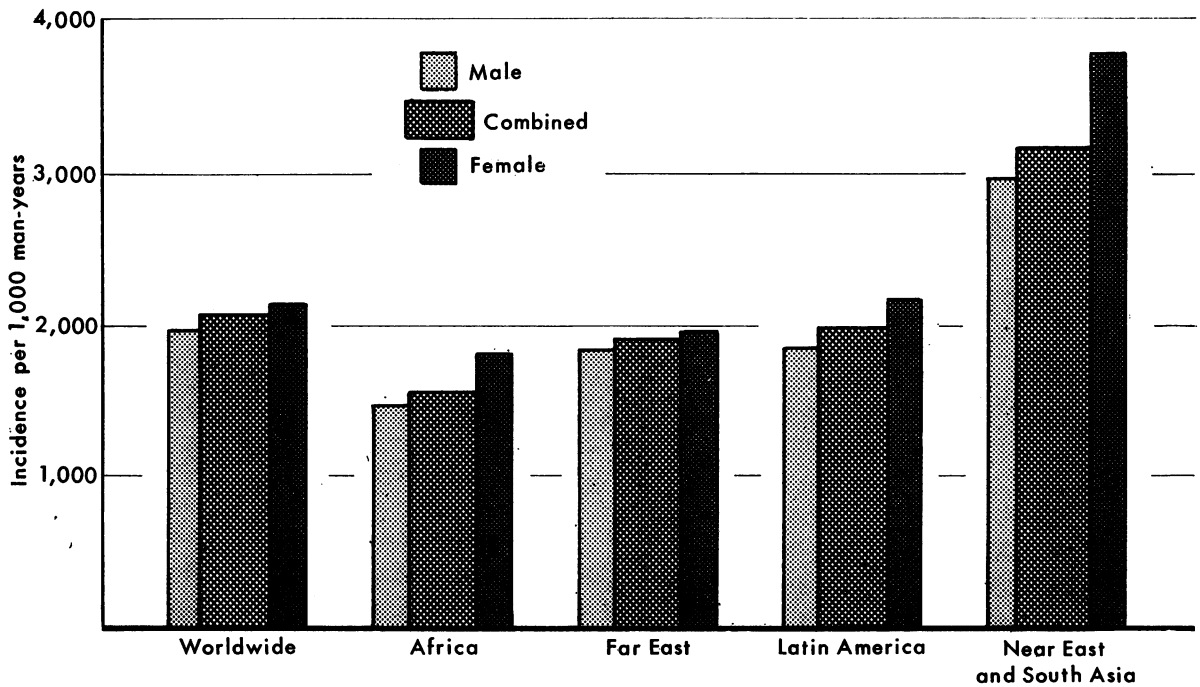
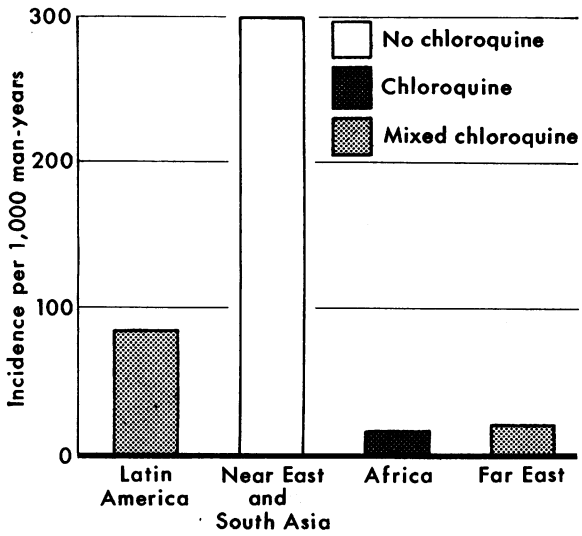


Figure 2. Incidence of amebiasis per 1,000 man-years among Peace Corps volunteers during 16 months abroad, by region, September 1, 1961, through December 31, 1962



43 percent of the incidence of all diseases. The high incidence of acute gastrointestinal disease is a phenomenon which occurs in most volunteer contingents during their initial months abroad. This pattern of high incidence indicates that medical stress usually is experienced by the volunteer during his early period overseas.

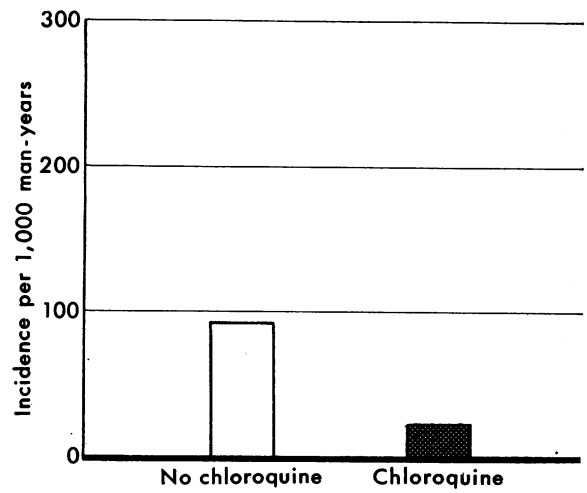
Of the gastrointestinal diseases afflicting the volunteers in their assignment areas, amebiasis has been a serious disease component only in certain regions. Indeed, the incidence of amebic dysentery has surpassed that of the dysenteries of unknown etiology in the Near East and South Asia region. In contrast, the incidence of amebiasis occurring in Subsahara Africa has been low. This variation in incidence by geographic region has pointed up the possibility that malarial suppressive therapy, with the use of chloroquine, might be a factor in the prevention or suppression of amebiasis.

Volunteers in the Near East and South Asia region were not assigned to endemic malarial areas during the period of reporting, whereas volunteers in Subsahara African countries had been given malarial suppressive therapy during this time. Use of chloroquine by the volunteers assigned to the Latin American and Far East regions was irregular (fig. 2).

Preliminary examination of the data from seven groups of Philippine volunteers tends to support the hypothesis of a favorable association of chloroquine used as a malarial suppressive with a lesser incidence of amebiasis (fig. 3). We should like to emphasize that the foregoing data are of a cursory nature and are only presumptive that a positive correlation exists between chloroquine and the prevention or suppression of amebiasis.

During the early months of the Peace Corps program operations, it was recognized that infectious hepatitis could be a serious disability to the volunteers abroad. A program of prophylactic administration of immune globulin (IG) was instituted for all volunteers. Before this prevention measure was undertaken on a general basis, three volunteer contingents in the Latin American region began to report cases of

Figure 3. Possible effect of chloroquine on incidence of amebiasis per 1,000 man-years among seven groups of Peace Corps volunteers in Philippine Islands, October 1961 through March 1963



Treatment	Number with amebiasis	Number without amebiasis	Man-years
No chloroquine	23	238	276.9
Chloroquine	4	224	161.3
Total	27	462	

Relative risk $\frac{23}{277} \div \frac{4}{161} = 3X$

infectious hepatitis. During the 12-month period, September 1, 1961, through August 31, 1962, 21 cases of infectious hepatitis were reported on a worldwide basis. Fourteen of these cases were in Chile, Colombia, and St. Lucia; an attack rate of approximately 12½ percent. An infectious hepatitis surveillance program was instituted along with the prophylactic administration of IG during this period. The data obtained from this surveillance program will be presented in another report.

Since the initiation of the prophylactic IG program, a considerable reduction has occurred in the incidence of infectious hepatitis. During the 7-month period, September 1, 1962, through March 31, 1963, only 13 cases were reported on a worldwide basis. Of these cases, three occurred in Colombia, One person had received 0.01 ml. IG per pound body weight 265 days before onset of the disease, another received 0.02 ml. IG per pound body weight 213 days before clinical symptoms of infectious hepatitis developed. The third person affected inadvertently did not receive IG. We believe that the reduced number of new cases of infectious hepatitis in Chile, Colombia, and St. Lucia can be attributed largely to the use of immune globulin.

The paucity of data on the dosage schedule of IG, the high incidence and prevalence of infectious hepatitis abroad, and the need for general epidemiologic information concerning the disease increases the importance of continuing this surveillance program.

Injuries, from minor wounds to fatal accidents, were among the 10 most prevalent afflictions, rating fifth from the highest in incidence. During the 19-month reporting period six volunteers died: one from amebiasis, four from airplane crashes, and one from an automobile accident.

Twenty-seven volunteers were evacuated to the United States: 10 for organic illnesses and 17 for emotional disorders. Based on man-years of exposure, the rate of return by medical evacuation was 9 per 1,000 (approximately 1 case per 100 man-years). Interestingly, acute emotional disorders not only comprised the larger number of medical evacuations (*1*), but the rate was significantly higher for women than for men.

Since almost all volunteers with serious illnesses are returned to the United States, the rate of removal (medical evacuations plus deaths) can be used as a rough index of the frequency of incapacitating illness (table 2).

Table 2. Number and rate of Peace Corps volunteers removed from overseas assignments, by cause, location, and sex, September 1, 1961–March 31, 1963

Cause	Worldwide			Latin America			Far East			Near East and South Asia			Africa		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
	Number														
Death	5	1	6	3	0	3	2	1	3	0	0	0	0	0	0
Medical evacuation	14	13	27	7	5	12	1	1	2	4	3	7	2	4	6
Organic	5	5	10	3	2	5	0	0	0	1	1	2	1	2	3
Emotional disorders	9	8	17	4	3	7	1	1	2	3	2	5	1	2	3
Number man-years	1, 899	1, 085	2, 984	609	295	904	416	387	803	248	86	334	626	317	943
	Rate [1]														
Death	2. 6	. 9	2. 0	4. 9	0	3. 3	4. 8	2. 8	3. 7	0	0	0	0	0	0
Medical evacuation	7. 4	11. 7	9. 0	11. 5	16. 9	13. 3	2. 4	2. 8	2. 5	16. 1	34. 9	21. 0	3. 2	12. 6	6. 4
Organic	2. 6	4. 6	3. 3	4. 9	6. 8	5. 5	0	0	0	4. 0	11. 6	6. 0	1. 6	6. 3	3. 2
Emotional disorders	4. 7	7. 4	5. 7	6. 6	9. 8	7. 7	2. 4	2. 8	2. 5	12. 1	23. 1	15. 0	1. 6	6. 3	3. 2

[1] Rate figures are per 1,000 man-years of exposure.

Discussion

During the planning period of the Peace Corps program in the spring and summer of 1961, there was considerable conjecture about health hazards the volunteers would face abroad. Health experiences of other American and European groups (military, State Department, British Colonial Service, and others) were not quite applicable to this program for a variety of reasons. Since the health statistics of the host countries frequently were limited, they could not show a true picture of disease risk. Consequently, a medical survey was made in each country in which volunteers were to be assigned. Information obtained from these surveys was used to plan for the health needs and training of the volunteers.

A high incidence rate of gastrointestinal illnesses was expected among the volunteers. But the magnitude of this rate observed during the reporting period was not anticipated. The seriousness of this category of disease should not be underestimated by those venturing into the developing areas of the world.

The occurrence of amebiasis among volunteers is a complex problem which is not easy to solve. Accuracy of diagnosis is doubtful in the review of periodic reports, although laboratory confirmation of amebiasis is stated. Consequently, analysis of the reports of the disease can be only suggestive. This is also true concerning evaluation of drugs for this disease. Controlled laboratory and field studies are needed in the search for effective preventive and therapeutic agents against amebiasis.

Infectious hepatitis was recognized early as a serious threat for a significant number of nonimmune volunteers. Reports of missionary groups and others from various parts of the world indicated that an attack rate of up to 20 percent could be expected in North Americans.

A review of the current status of the use of IG finally led to administration of a large initial dose of 0.05 ml. IG per pound body weight to each volunteer and a second dose in 6 months. It is still too early to judge the effects of this schedule. The reduced incidence of infectious hepatitis observed from September 1962 through March 1963 indicates a favorable response to this dosage schedule. No cases occurred in volunteers given 0.05 ml. IG per pound body weight. Final recommendations concerning dosage level will have to await analysis of the date.

Two particular conditions have caused concern regarding maintenance of the volunteers' health abroad. The first condition is the volunteer's attitude toward his personal hygiene. The general image of Peace Corps activity, indeed, the very concept of performing service at "village level" has tended to foster reduction of cultural health standards. This grass roots attitude has subconsciously or consciously affected most volunteers in varying degrees. How much of the present incidence of disease among the volunteers can be attributed to reduced health standards is moot. The grass roots attitude undoubtedly has contributed significantly to the incidence of gastrointestinal illnesses.

The second condition, exposure to exotic tropical diseases, has not yet materialized as an important cause of illness. A number of factors may be involved in limiting the rapid introduction of these diseases. The primary factor has been lack of sufficient exposure time.

Only during the past few months has there been a large enough number of volunteers overseas to reflect a significant trend in tropical illnesses. An increased incidence of exotic diseases is expected to occur, and surveillance of these diseases is being expanded by means of a variety of laboratory examinations.

Summary

Preliminary data concerning health experiences of Peace Corps volunteers during their first 19 months abroad showed a comparatively high incidence of acute diseases, particularly gastrointestinal illnesses.

Disease incidence varied by region and sex. The highest incidence occurred in the Near East and South Asia region, but a consistently higher incidence of disease occurred among women volunteers in all regions.

The data revealed a presumptive indication that malarial suppressive doses of chloroquine may possibly prevent or suppress amebiasis. The data also indicated that administration of immune globulin to the volunteers may have contributed to a reduced incidence of infectious hepatitis.

Of 4,126 volunteers abroad from September 1, 1961, to March 31, 1963, 6 died. Because of organic or emotional disorders 27 returned to the United States.

REFERENCE

(*1*) Thomson, C., and English, J.: The premature return of Peace Corps volunteers. Peace Corps Conference Paper, January 1963.

PUBLICATION ANNOUNCEMENTS

Address inquiries to publisher or sponsoring agency.

The School Improvement Program of the National League for Nursing, 1951–1960. (Code #14–1079.) 1963; $2. National League for Nursing, Inc., 10 Columbus Circle, New York, N.Y.

Today's Diploma Schools of Nursing. (Code #16–1081.) By Elizabeth V. Cunningham. 1963; $3.50. National League for Nursing, Inc., 10 Columbus Circle, New York, N.Y.

Therapeutic Methods in Soviet Psychiatry. I.C.R.S. Medical Reports. Monographs in Soviet Medical Sciences, No. 3. By Bruno Listig. 1963; 63 pages. Fordham University, New York, N.Y.

Regulation of Sewer Use. 1963; 48 pages; $1 for members, $1.50, nonmembers. Water Pollution Control Federation, 4435 Wisconsin Ave. NW., Washington, D.C.

Profiles of Manpower in Science and Technology. NSF 63–23. 1963; 36 pages. National Science Foundation, 1951 Constitution Ave. NW., Washington, D.C.

Public Health Nursing Practice. By Ruth B. Freeman, R.N., Ed.D. 1963; 3d edition; 455 pages; $5.50. W. B. Saunders Co., West Washington Square, Philadelphia, Pa.

Helping the Alcoholic and His Family. By Thomas J. Shipp. 1963; 140 pages; $2.95. Prentice-Hall, Inc., Englewood Cliffs, N.J.

Medical Behavioral Sciences: A selected bibliography of cultural anthropology, social psychology, and sociology in medicine. By Marion Pearsall. 1963; 134 pages; $4. University of Kentucky Press, Lexington, Ky.

Education for the Health Professions: New York's needs in an age of change. A comprehensive plan for comprehensive care. Report to the Governor and the Board of Regents. June 1963; 159 pages. New York State Committee on Medical Education, 444 Madison Ave., Room 3101, New York, N.Y.

The Training of Visiting Homemakers. Committee on Homemaker Services. Family and Child Welfare Division, Canadian Welfare Council. 1963; 8 pages; 25 cents. Canadian Welfare Council, 55 Parkdale Ave., Ottawa, Ont., Canada.

World Health Organization

WHO publications may be obtained from the Columbia University Press, International Documents Service, 2960 Broadway, New York, N.Y.

CCTA/WHO African Conference on Ancylostomiasis. Brazzaville, 22–29 August 1961. Report. WHO Technical Report Series No. 255. 1963; 30 pages; 30 cents; Geneva.

The Care of Well Children in Day-Care Centres and Institutions. Report of a Joint UN/WHO Expert Committee convened with the participation of FAO, ILO, and UNICEF, Geneva, 23 October–1 November 1962. WHO Technical Report Series No. 256. 1963; 34 pages; 30 cents; Geneva.

Training of the Physician for Family Practice. Eleventh report of the Expert Committee on Professional and Technical Education of Medical and Auxiliary Personnel. Technical Report Series No. 257. 1963; 39 pages; 60 cents; Geneva.

Expert Committee on Medical Assessment of Nutritional Status. Report. WHO Technical Report Series No. 258. 1963; 67 pages; $1; Geneva.

Expert Committee on Biological Standardization. Fifteenth report. WHO Technical Report Series No. 259. 1963; 60 pages; 60 cents; Geneva.

The Public Health Aspects of the Use of Antibiotics in Food and Feedstuffs. Report of an expert committee. WHO Technical Report Series No. 260. 1963; 30 pages, 30 cents; Geneva.

Arterial Hypertension and Ischaemic Heart Disease. Comparison in epidemiological studies. By Alex M. Burgess, Jr., Zdeněk Fejfar, and Aubrey Kagan. 1963; 36 pages; 30 cents; Geneva.

Terminology of Malaria and of Malaria Eradication. Report of a Drafting Committee. 1963; 127 pages; $4; Geneva.

World Directory of Veterinary Schools. Published under the auspices of the Food and Agriculture Organization of the United Nations and the World Health Organization. 1963; 216 pages; $5.25.

Medicine and Public Health in the Arctic and Antarctic. Selected papers from a conference. Public Health Papers No. 18. 1963; 169 pages; $2; Geneva.