

# **Symposium: History and Legacy of The Interdepartmental Committee on Nutrition for National Defense (National Development)**

## **Origins of the Interdepartmental Committee on Nutrition for National Defense, and a Brief Note Concerning Its Demise<sup>1</sup>**

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**ABSTRACT** The Interdepartmental Committee on Nutrition for National Defense was established in 1955 after malnutrition was found common among troops of the Republic of Korea and of the Republic of China (Taiwan). The initial purpose was identification of nutrition problems among military personnel (later, and among civilians) of countries of "special interest." Surveys measured status, assisted with the establishment of nutrition resources, and facilitated investigator learning and research. A major initial accomplishment was the preparation of a manual of procedures, which evolved into the 1963 Manual for Nutrition Surveys. The first 3 surveys, conducted in 1956, were of the armies of Iran, Pakistan, and Korea. They identified poor nutrition status in some troops, provided a basis for improving rations, and confirmed the effectiveness of the methodology. These surveys were followed by surveys of 30 additional countries that in nearly all instances included civilians and provided a basis for programs and the institutions for improvement of nutrition. On August 1, 1967, the program was reorganized and the Nutrition Program, CDC, based at NIH, was created. This occurred in response to the 1967 Partnership for Health Amendments "to make a comprehensive survey of the incidence and location of serious hunger and malnutrition, and health problems incident thereto, in the United States and to report these conditions to the Congress." The Ten State Nutrition Survey was done in response. Findings of malnutrition, especially in populations of low-income states were politically unwelcome in some quarters. Consequently the program was redirected, and, according to 2 observers, the survey findings were suppressed. *J. Nutr.* 135: 1257-1262, 2005.

**KEY WORDS:** • nutrition surveys • ICNND • Korea • Taiwan • Manual for Nutrition Surveys

The Interdepartmental Committee on Nutrition for National Defense (ICNND)<sup>3</sup> was created in 1955 during the Eisenhower Administration in the context of the United States' policy of containment of the Soviet Union. A 1953 nutrition survey of the Republic of Korea Army (ROKA) had found severe malnutrition among troops and laborers, and a 1954 nutrition survey of the Republic of China Army

(ROCA) troops (Taiwan) had confirmed the poor nutritional condition of that army. These surveys showed the consequences of poor nutrition and health on performance and the high likelihood that such troops would not be able to effectively use resources provided through the Mutual Defense Assistance Program for technical, military and economic aid. These findings raised important questions concerning nutrition and performance of troops of other U.S. allies.

As stated by Frank B. Berry, MD (1,2), assistant secretary of Defense (Health and Medical) and chairman of the Committee, "The purpose of the Committee is to deal with nutrition problems of technical, military, and economic importance in foreign countries in which the United States has a special interest" (3). The Committee served as a "central clearing house for food and nutrition information," reviewed nutrition projects in countries where the United States was giving assistance and provided advice concerning the coordination and the conduct of field projects. Objectives of the surveys were to assess, to assist, and to learn. The assessment measured the nutritional status of the population, identified major problems, and provided a basis for recommendations for improvement of nutrition and health. Assistance was given by (a) training counterpart personnel in nutrition evaluation tech-

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<sup>3</sup> Abbreviations used: ICNND, Interdepartmental Committee on Nutrition for National Defense; ROCA, Republic of China Army; ROKA, Republic of Korea Army; USPHS, U.S. Public Health Service.

niques, with an emphasis on clinical and biochemical methods, and assessment of dietary intakes, food production, and processing; (b) providing essential equipment and supplies for the establishment of a medical nutrition and food laboratory in the country; (c) practical recommendations to improve utilization of local resources to improve nutrition of the population. The surveys were an opportunity for U.S. personnel to learn about nutritional diseases, their pathogenesis and manifestations, the foods, the food patterns, and the practices that affect nutrition and to conduct research. These experiences were a stimulus to clinical nutrition research in the United States and the host countries. Because it was obvious that the nutrition customs, the resources, and the status of populations have profound effects on nations, it was not long before the committee broadened the purposes of the surveys to include civilians.

This paper will focus on the origins and the early days of the ICNND and will finish with a brief note concerning the latter days of its last manifestation.

The need for the ICNND was first suggested from results of a 1953 nutrition survey of 2759 ROKA troops and 324 laborers (4) by Harold R. Sandstead, M.D. (5-7), U.S. Public Health Service, and a team of 11 U.S. Army officers and men that was done "under the auspices of the U.S. Armed Forces Far East Command, to obtain factual information as to the nutritional status and requirements of ROKA personnel and to make recommendations for corrective action as indicated" as requested by the Surgeon General (Army). The sensitive nature of the findings resulted in the data being classified and referred to obliquely until 1963, when a limited report was published (4).

The genesis of the survey was, according to W. J. Darby (8), related to a report from Ambassador Cabot Lodge to President Dwight Eisenhower that described a Korean servant with nyctalopia. In addition (A. E. Schaefer, Reflections on the ICNND, Eskin Biomedical Library, Vanderbilt Medical Center, Nashville, TN; unpublished report<sup>4</sup>), U.S. Army personnel had observed the poor condition of ROKA forces.

Findings revealed a ration that included unpolished 92% milled rice, soybean, barley, dried cuttlefish, red pepper, bean mash, soya sauce, bean sprouts, radish, seaweed, onions, garlic, and sea salt, and, seasonally, carotene and ascorbic acid rich foods. About 20-40% of protein was from animal sources. Total energy and fat intakes were low. Meat, milk, eggs, fruit, potato, tomato, and raw vegetables were for practical purposes excluded. Cooking was usually prolonged.

Many recruits were underweight, and weight loss increased with time in the service, as did signs of malnutrition (Table 1). Evidence of ariboflavinosis (9,10) was prevalent. Current evidence indicates similar clinical signs can occur with deficiencies of pyridoxine (11) and zinc (12,13), and that zinc is required for activity of flavokinase and pyridoxal kinase (14). When the ration was based on polished rice, thiamin intakes were low, and calf tenderness was common. Severe thiamin deficiency was not seen, presumably because the patients were hospitalized. Signs of ascorbic acid and retinol deficiencies were also common. Total serum protein concentrations decreased with training, and edema was observed. Hemoglobin concentrations also decreased. Two common findings of uncertain origin were bilateral symmetrical enlargement of the

TABLE 1

Nutrition findings in ROKA before and after training<sup>1</sup>

Index	% Abnormal		
	Training		
	1 Day	16 Weeks	Troops <sup>2</sup>
Energy intake, calories		3510	3185
Fat intake, g/d		17.5	26.6
<90% Standard weight	30		48
Riboflavin intake, mg/d		0.57	0.87
Bilateral angular oral fissures	29		50
Dyssebacea of <i>ala nasae</i>	6		77
Thiamin intake, mg/d		1.09	61
Calf tenderness	5		1.13
Ascorbic acid intake, mg/d		3.2	4.0
Serum ascorbic acid.			19
<0.2 mg/dL	60		43.2
Scorbutic gums	21		100
Retinol intake, IU/d		80	46
Serum retinol <20 µg/dL	0		0
Follicular hyperkeratosis	3		17
Protein intake, g/d			13
(60-80% plant)		79.2	15
Total Serum Protein <6 g/dL	0		293
Edema	0.2		0
Hemoglobin <13 g/dL	4		8.6
Bilateral parotid enlargement	4		8.6
Hyperpigmentation of exposed area	24		32
		75	42
			88

<sup>1</sup> Refs. (3,4).

<sup>2</sup> Of 2 camps of seasoned troops surveyed, the more severe finding is noted.

parotid gland (15) and hyperpigmentation of the face and the backs of hands, without glossitis.

Dr. Berry, appointed assistant secretary of Defense in 1954, was appraised of the ROKA survey. He then organized an ad hoc committee on nutrition problems (3). Members were Dr. Berry, Dr. Sandstead, Stanhope Bayne-Jones, MD (16), consultant and advisor of preventive medicine to the Surgeon General (Army), Howard T. Karsner, MD (17), consultant and advisor to the Surgeon General (Navy), and W Henry Sebrell, Jr., MD (18), former director of the NIH. According to Dr. Schaefer's "Reflections."<sup>4</sup> Dr. Bayne-Jones suggested that a committee was needed for studying nutrition problems, that was a separate entity without responsibility to a single department, and that monetary support should be provided primarily by one agency, with the other agencies contributing to special projects when defined and when funding was available.

Dr. Sandstead and Ernest M. Parrott, PhD, chief of the Nutrition Branch, Surgeon General (Army) reported on "Nutrition as a Military Problem" (19) to the 1954 annual meeting of the Association of Military Surgeons. Their paper describes findings in "Asian" troops and gives recommendations. Included are the following, "1) training of native personnel in both medical and public health aspects of nutrition; 2) development of research and clinical facilities for study of nutritional problems indigenous to those countries; 3) continual working with the native quartermaster corps to improve food service; and 4) close cooperation of the United States military medical services, and the health, agricultural, and economic advisers of the Missions with their counterparts in order to develop a program that will meet local food requirements."

<sup>4</sup> This article, "Reflections of Arnold E. Schaefer on the Interdepartmental Committee for National Defense (ICNND)," is available with the online posting of this paper at [www.nutrition.org](http://www.nutrition.org).

TABLE 2

*Nutrition signs before and after new ration*<sup>1</sup>

Index	Baseline %	New ration %
Nasolabial seborrhea	84	~20
Angular oral fissures (bilateral)	70	
Glossitis (severe)	47	
Scrotal dermatitis	16	
Calf tenderness	15	0
Follicular hyperkeratosis	20–30	Back, 2 Chest, 0 Buttock, 12

<sup>1</sup> Ref. (21).

The condition of troops of the ROCA was also of concern. The Ministry of the National Defense of the Republic of China requested assistance, probably in 1953, through Ambassador William C. Bullitt. In response, the Williams-Waterman Fund for the Combat of Dietary Diseases supported a survey of 700 troops during May–June 1954, by Herbert Pollack, MD, professor of internal medicine, School of Medicine, New York University (20). Signs consistent with ariboflavinosis and retinol deficiency were common. Subsequently, Dr. Pollack and a team from the U.S. Army Medical Research and Nutrition Laboratory at Fitzsimons General Hospital, Denver, CO, tested a new ration on 1049 ROCA troops (21). At baseline, malnutrition was common (Table 2). The new ration was effective. Current knowledge suggests persistent angular fissures and nasolabial seborrhea may have been reflections of pyridoxine (11) or zinc (12) deficiencies.

Dr. Berry formally established the ICNND in early 1955 through a memorandum signed by representatives of the various departments and agencies: Defense, Army, Navy, Air Force, State, International Cooperation Administration (now the Agency for International Development), Health Education and Welfare, Agriculture, and Atomic Energy Commission (3). Later Interior was added. Liaison organizations included Food for Peace, the Pan American Health Organization, the United Nations Children's Fund, FAO, and WHO. Highly important for success was the expertise of faculty from the many cooperating universities (8). Dr. Berry was chairman. Successive executive secretaries were Harold R. Sandstead, MD, and Arnold E. Schaefer, PhD (22). Listed in Dr. Schaefer's "Reflections" and the Manual for Nutrition Surveys (23,24) are the members of the committee; the secretariat; and the consultants.

Offices of the ICNND were in the Stone House at NIH. Dr. Sandstead soon identified 2 remarkable associates, Mrs. Harriet Martin, administrator, and Dr. Schaefer, deputy executive director (8). Later events would prove the fortuitousness of these appointments. A pressing task was development of a procedures manual. Dr. Schaefer focused on the laboratory methods, whereas Dr. Sandstead focused on organization and clinical methods (A. E. Schaefer, "Reflections").

Dr. Sandstead must have been delighted with his new responsibility. After service during World War II as the head of the health section of the Supreme Headquarters Allied Expeditionary Force mission to the Netherlands, where he had extensive experience with starvation (25), he was appointed chief of the Nutrition Section of the States Relations Division, USPHS. With colleagues, he conducted nutrition studies of Alaskan Eskimos, natives of Guam, and >5000 people in Florida, Georgia, Maryland, Michigan, and Vermont (26,27),

that found many people afflicted with signs consistent with deficiencies of retinol, certain B vitamins, ascorbic acid, vitamin D, and iodine. He and his colleagues were ready to begin a national cooperative nutrition surveillance program with the states, when it was abruptly terminated by the Bureau of the Budget in the White House "because of budgetary limitations" (6).

In early 1955, Drs. Berry and Sandstead, and Dwight L. Wilber, MD, associate professor of medicine, Stanford University, visited Greece, Turkey, Egypt, Iraq, Iran, Lebanon, and Pakistan to inform their governments of the ICNND. Soon after, Iran and Pakistan requested surveys (28).

In late October 1955, Dr. Sandstead visited the U.S. Army Medical Research and Nutrition Laboratory at Fitzsimons General Hospital, Denver, CO. He planned to visit scientists at Oregon State University. Unfortunately, on November 1 the plane on which he was traveling was bombed. Dr. Sandstead was honored by his colleagues (5–7) and was buried in Arlington National Cemetery.

Dr. Schaefer stepped into the breach, and with support from Dr. Berry and others on the Committee, continued the planning and the completion of the initial procedures manual. Dr. Schaefer describes these difficult times in his "Reflections." The editorial board included John B. Youmans, MD (29), William J. Darby, MD, PhD (30), William J. McGanity, MD, of the University of Texas Medical Branch, Galveston, TX, and Edwin Bridgforth, MS, of Vanderbilt University School of Medicine. Mr. Bridgforth was responsible for the sections concerning research design, sampling, data collection, and analysis.

Dr. Schaefer was appointed executive director in 1956. His contributions in this capacity are reviewed by Gerald F. Combs (22) and described to some extent in Dr. Schaefer's "Reflections."

Dr. Youmans, dean of the Vanderbilt University School of Medicine, replaced Dr. Sandstead as director of the Iran and Pakistan surveys. Robert R. Williams, MD, was director of the second ROKA survey. Gerald F. Combs Sr., PhD, deputy director provided leadership when Dr. Williams was called away.

The first 3 surveys were on the troops of Iran, Pakistan, and Korea (Table 3). Ariboflavinosis was the most common micronutrient deficiency detected. The average daily intake was 1.0–1.2 mg. In Korea and Iran, 13% and 15% of troops displayed angular fissures with equal numbers showing scars. Follicular hyperkeratosis was common among troops of Iran, Pakistan, but calculated intakes of retinol and laboratory findings were not related to this sign. Ascorbic acid intakes were lowest in Iranian troops, among whom low serum concentrations were common and many had scorbutic gums. The ROKA were better nourished in 1956 than in 1953. Energy intakes were more adequate, and most signs of malnutrition were less frequent. Continued evidence of malnutrition among recruits indicated little change in civilian nutrition.

The ICNND in its several manifestations was a major success (31). The Department of Defense Advanced Research Projects Agency provided the support for the 31 surveys during Dr. Berry's tenure. The Department of State Agency for International Development and the Department of Health Education and Welfare National Center for Chronic Disease Control, Bureau of Disease Prevention and Environmental Control provided subsequent support. In addition to results of the nutrition surveys (32–63), the ICNND published the Manual for Nutrition Surveys (23,24), which is a standard reference, compiled and published a Food Composition Table

TABLE 3

Data from the first three ICNND surveys<sup>1</sup>

	% Affected		
	Korea	Iran	Pakistan
No. examined	1514	1730	2019
No. laboratory analysis	303	396	440
Riboflavin intake, mg/d	1	1.1	1.2
Urine riboflavin <30 µg/6 h	16	21	3
Angular oral fissures	13	15	0.6
Angular oral scars	11	21	0.1
Thiamin intake, mg/d	2.1	2.8	2.6
Urine thiamin <25 µg/6 h	5	9	6
Absent ankle jerks	0.1	1.3	0
Retinol intake, IU/d	1218	3766	3790
Serum retinol <20 µg/dL	18	24	0.6
Serum carotene <40 µg/dL	7	58	11
Follicular hyperkeratosis	5	30	29
Ascorbic acid intake, mg/d	55	22	60
Serum ascorbic acid <0.2 mg/dL	1	51	44
Scorbutic gums	0.3	1.6	0

<sup>1</sup> Ref. (3).

for Latin America in collaboration with the Institute of Nutrition for Central America and Panama, and a similar table for Africa, and supported research on nutrition disease and related conditions in many regions of the world. A partial listing of research topics includes studies of zinc deficiency in Egypt (64–72); studies of iodine deficiency and goiter in Egypt (73,74); studies of anemia associated with parasitism (75–85); and studies of anemia, folate, vitamin E, coenzyme Q, zinc, and chromium in Middle Eastern infants with protein-energy malnutrition (86–96); studies of retinol deficiency among children in Bangladesh and elsewhere; studies of iodine deficiency disease; studies of bladder stone in Thailand; evaluations of school lunch programs in Peru, Chile, and the Philippines; enrichment of flour with retinol; and development of infant formula with soy milk. In addition, work of the ICNND led to the establishment of nutrition institutes and other nutrition research entities in some of the countries surveyed that are important in their regions in 2004.

On June 30, 1965, the ICNND became the Nutrition Section, Office of International Research. Under this name, the committee continued its international activities. On August 1, 1967, the Nutrition Section was transformed into the Nutrition Program, National Center for Chronic Disease Control, Bureau of Disease Prevention and Environmental Control, PHS. Events leading to this new assignment are summarized in Dr. Schaefer's "Reflections." The change was in response to the 1967 Partnership for Health Amendments that directed the secretary of Health, Education and Welfare "to make a comprehensive survey of the incidence and location of serious hunger and malnutrition, and health problems incident thereto, in the United States and to report these conditions to the Congress" (31). The Nutrition Program planned and implemented the first comprehensive survey of nutrition of Americans, entitled the Ten State Survey. The Nutrition Program also developed plans and objectives for the future that focused on 3 areas: malnutrition in vulnerable populations in the United States; nutrition, in relation to metabolic diseases; and malnutrition in developing countries. The Ten State Nutrition Survey was achieved in part through the expertise of

university faculty, many of whom participated in ICNND surveys.

The Ten State Survey found malnutrition, especially in "low-income" states. The Senate's Select Committee on Nutrition led by Senator George McGovern conducted hearings on the survey and other nutrition issues, which proved politically difficult. The administration held the Second White House Conference on Nutrition. Nutrition surveillance was assigned to the National Center for Health Statistics. Later, the Nutrition Program was removed from the NIH to the CDC in Atlanta, and was redirected. Findings from the Ten State Nutrition Survey were suppressed (A. E. Schaefer (22), personal communication; W. J. McGanity, of the University of Texas Medical Branch, Galveston, TX, personal communication). Dr. Schaefer resigned from the Nutrition Program.

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