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COST-EFFECTIVENESS OF MOTHERCRAFT AND OTHER ALTERNATIVES FOR HAITI*

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* Should be read in conjunction with the evaluation prepared by Joyce M. King, "An Evaluation of BON-AID Centers for Education and Nutritional Rehabilitation" January 1979.

A. Statement of the Problem

The purpose of the following analysis is to develop an appropriate methodology to assess the cost-effectiveness of the Bureau of Nutrition's (BON) system of Rehabilitation and Education Centers (CERNs) as opposed to other nutrition intervention strategies. The objective of the analysis is not only to determine how funds may be used most efficiently, but includes the constraint that a specified output (i.e., nutritional impact) must be achieved.

Therefore, cost-effectiveness differs from cost-benefit studies in the sense that the latter expedites comparisons among several programs with differing objectives, while the former is used in a comparison of different ways of reaching the same objective.

B. Description of the Goal

The goal of the DSPP/BON is to improve and promote the nutritional status of the Haitian population, particulary among the most vulnerable age group, children from 0-5.

Achieving this goal has generally taken the form of a two-fold strategy, which has become known as the "Mothercraft" concept. First, nutrition intervention must have an immediate, positive and therapeutic impact on the nutritional condition of seriously or severely malnourished children. This impact takes the form of benefits derived from supplementary feeding programs administered by the CERNs. Second, and most important, the

intervention must promote low cost preventive activities by: (1) Getting mothers to participate in nutrition demonstration so that she understands that use of available food affects the health of her child; and (2) Raising the level of food production through agriculture extension activity in order to meet daily food requirements. Low cost, locally produced food and a specially tailored diet are key elements of the BON CERN geared to be compatible with the resources available to the mother at home.

C. Indicators of Impact and Data Availability

Data requirements that are necessary to do a thorough cost-effectiveness study are rigorous. Unfortunately in Haiti, cost information detailed enough to give a realistic assessment of different program related expenditure is at best sporadic, making comparisons between strategies difficult.

On the effectiveness side, reliable data are particularly lacking. Most often, the methodology developed to determine the impact of a program is defined by what statistics are available rather than by what program analysts would like to measure if they could.

Ideally, in order to more scientifically assess the effectiveness of various nutrition intervention strategies, statistical studies to examine at least several of the following indicators should be undertaken:

- To measure therapeutic impact, indicators include changes in: Hemoglobin levels, hematocrit values, total serum protein, serum albumin levels,

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1. As an examination of agriculture extension is being done in another evaluation, it will not be discussed here.

etc. This type of data is too sophisticated and costly to obtain on a massive scale; hence the incidence of the disappearance of edema and changes in percent of standard weight for age are more commonly used.

The impact of nutrition education on the mother will be most directly manifested by an improvement in the nutritional status of her family. Indicators to measure this impact include: Increased growth of the child after being discharged from the center (in terms of weight for height criterion); increased growth performance of new children born into the family and/or other siblings at home; a decrease in the 1-4 mortality; a decrease in the number of admissions into hospitals for PCM.

- To measure the effectiveness of program content in terms of stimulating mother motivation and participation, indicators include: Attendance rates; the number of repeaters; the number of dropouts.

- Indicators to measure the other kinds of preventive impact of nutrition intervention (either from expanded education or increased food production) include income/production data such as: Observational and statistical data on changes in diet and other consumption behavior overtime; changes in food availability due to an increase in local food production and/or disposable family income; changes in preferences towards consuming calorie-intensive foods (i.e., the calorie-income elasticity);[2] changes in the degree of the substitution effect (if it is dominant, an increase in food production will most likely be converted to income to purchase other goods rather than be retained for consumption).

As already stated, detailed data to measure the above indicators of program impact are generally not avaiable. In fact, indicators

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2. The elasticity is defined as the percentage change in per capita calorie consumption resulting from a one percent increase in per capita income. In most LDCs this indicator is inelastic at around .05 indicating the relative disutility of raising per capita consumption by attempting only to raise per capita income.

involving income/production factors are difficult to quantify and require advanced economic and statistical techniques that are often too expensive and difficult to administer. However, even available data in Haiti are usually unreliable due to: (1) A small sample size; and (2) Questionable data collection techniques and careless or subjective data recording. Often, good statistical information is so lacking, that one is generally forced to make rather heroic assumptions which tends to mitigate the significance of any conclusions drawn.

Nonetheless, various studies and evaluations of the Mother-craft approach to nutrition intervention have been attempted with varying degrees of success. For an indepth review of the literature see J. King, "Analyses and Compilations of Nutrition Data and Studies", March 1978. A quick summary of effectiveness indicators that have been most commonly used in Haiti include: [3]

- Overall percent standard weight for age gains in children admitted to the center; [4]
- Continuous gains after discharge;
- A decrease in Hôpital Albert Schweitzer's (Deschappelles) admission rates for PCM in areas served by a nutrition center;
- A decrease in community mortality rates in five districts served by a nutrition center;

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3. See, King, et. al., "Preventive and Therapeutic Benefits in Relation to Cost:...", American Journal of CLinical Nutrition, April 1978, pp. 679-690, for the most recent rehash of the data.

4. Roughly 85% are said to benefit leaving 15% who fail to improve. Of that number, 90% do not respond to nutritional therapy due to other illnesses. See, Ibid., p. 682.

- An increase in food consumption over time in an area served by one nutrition center (Fond Parisien);

- A positive response (in terms of standard weight for age gains) of the younger siblings of children who have been enrolled in a nutrition center (sample size was 56 paired couples).

The present study is limited by two factors: (1) Time; and (2) Lack of adequate data with which to make retrospective analyses.[5] The following criteria will be used:

- The capability of the nutrition intervention strategy as measured by the maximum number of children and mothers that one center (or another type of facility) can rehabilitate or train;

- The actual number of mother and child participants (per facility);

- The cost per "recuperated" child and "educated" mother of a particular nutrition strategy;

- Overall changes (i.e., gains or losses) in percent of standard weight for age;

- Mortality rates expressed as the number of children who die during a program as a percent of total children enrolled.

Section E of this paper spells out the definitions and criteria used in determining these indicators. Due to the rather arbitrary nature of many of these terms, the cost-effectiveness analysis itself should be considered as a rough order of magnitude only. In addition, the following caveats should be mentioned:

- The nature of this assignment has been to focus on the CERN. Therefore, a great deal of attention has been paid to obtaining detailed cost information. Unfortunately, time and data constraints did not allow the same sort of attention to be placed on other intervention strategies. It is inevitable that some expenditure imformation (direct or

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5. Impact data on the Projet Intégré is the most detailed.

administrative) has been omitted for these activities. Thus, cost comparisons between intervention strategies may be biased against the CERN; almost automatically its costs will be higher as nearly all budgetary allocations have been accounted for.

- The terms "rehabilitated" and "educated" that have been used in data research activity done in Haiti may be confusing. A rehabilitated child and an educated mother by these standards are simply those who have remained at a center for longer than a specified period of time (for the purposes of this study, it is assumed to be two months);

- Numbers mentioned in the cost-effectiveness analysis that are attributed to the capability of a nutrition strategy to promote the "spill-over" of preventive benefits to the younger siblings of rehabilitated children due to better trained mothers, should be regarded as theoretical and are listed for comparative purposes only. Scanty data render "spill-over" assumptions speculative; conclusions drawn on the basis of available statistics would be, at best, tenuous.

D. Nutrition Intervention Strategies to be Analyzed

The following briefly summarizes the capabilities and major activities of BON CERNs as well as alternative intervention strategies that have been tried in Haiti. All strategies share the common goal of improving the nutritional status of the population, and specifically target efforts to the most vulnerable age group of children with ages 1 to 5.[6]

1. BON CERN (30 centers)

Description - Promotes rehabilitation and education activities through demonstration, participation and child feeding

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6. According to the last quarterly report, 21% of all children admitted into CERNs were over the age of five. DSPP/BON "Activities du Programme d'Amélioration de la Nutrition..." Oct - Dec 1977 and Jan - March 1978.

programs (which includes Akamil).[7] Does not intend to provide all the child's calorie and protein requirements, but rather, 85 % as stated in the Norms. In addition, the CERN promotes expanded food production through agriculture extension activity. Little or no services of the curative-medical type are provided.

Maximum Capability per CERN - 35 children and 35 mothers per one four month session x three sessions = 105 children and 105 mothers annually.

2.. HACHO Center (20 centers)

Description - Objective is to provide feeding and education services similar to that of a BON CERN. Food supplied at the center includes both Title II and locally purchased items (primarily the former). Norms are not established specifying the percent of daily protein and calorie requirements that should be met by the center, nor has the actual percent been determined. Center does not promote agriculture extension activity, and, like the CERN, very little in the way of medical services are provided.

Maximum Capability per Center - is the same as that for a CERN.

3. Church World Service/Service Chretien (10 centers)

Description - Clinic provides supplementary feeding of malnourished children with Title II food blends. Because these are dry distributions, prepared at home, the percent of daily protein and calorie requirements satisfied by the Church World Service (CWS) center is not known. Mothers receive

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7. See Annex 1, Attachment D for a list of CERN food purchases (per month) and costs of center diets provided.

nutrition and hygiene education. Some participatory demonstration of food preparation takes place, mainly in the form of making Akamil.

Maximum Capability per Center - 100 children per week (four groups of 25 mothers and 25 children that visit the center once a week). Length of stay until weight becomes "normal" varies from four to six months. Maximum number of mothers and children served per year is 300 each.

Projet Integré

a. Centre de Nutrition

Description - Similar in concept to the CERN, the centre provides Title II "Kwash milk"[8] and locally purchased foods, along with nutrition education for the mother. If milk is included, the centre supplies 169% of daily required protein and 132% of required calories. Not including milk, the daily diet supplies 112% of required protein and 111% of required calories.

Maximum Capability per Centre - 30 children and 30 mothers per one 3 month session x four sessions = 120 children and 120 mothers annually.

b. Foyer de Demonstration

Description - A two week intensive education session emphasizing participation and demonstration. The program focuses on the mother as a change agent; any woman expressing interest may participate whether her child is malnourished or not.

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8. Fortified milk which includes approximately one cup of powdered milk, ½cup of sugar and ½cup of oil.

However the number of mothers enrolled with first degree and normal children is very low; the foyer is located in areas with the highest concentration of population in greatest need. The percent daily requirement of protein and calories satisfied by foyer feeding programs equals that of the centre.

Maximum Capability per Year - 15 children and 10 mothers may enroll per session x 20 sessions (number which one nutritionist may handle during one year) = 300 children and 200 mothers.

5. Hospital Rehabilitation

a. Hôpital Albert Schweitzer

Description - Hospital provides intensive inpatient care along with an outpatient nutrition center type ward (Ward III) for malnourished children who are no longer gravely ill. Children admitted into the hospital are usually kept for about two weeks, thereafter remaining as an outpatient in Ward III for an additional two to three weeks.

Maximum Capability - Determined by the availability of beds. During 1977, the hospital was able to admit 470 children suffering from serious or severe malnutrition.

b. Hôpital de l'Universite de l'Etat d'Haiti

Description - Hospital provides intensive inpatient care.

Maximum Capability - Pediatric ward has 125 beds of which around 20 are occupied year round by serious or severe cases of malnutrition. Assuming an average length of stay of four weeks, roughly 300 children are admitted per year.

E. Cost-Effectiveness Table and Analysis of Alternative Program Strategies

1. Definition/explanation of terms and assumptions used

Before presenting the cost-effectiveness table, it is important to examine the assumptions made and the definition of terms used while setting up the table. With the exception of the target population, the headings listed below are numbered to correspond with those on the table which is found on page 14a.

Target Population - is defined as all children between the ages of 0 and 5 suffering from second or third degree malnutrition[9] and therefore needing rehabilitation.

During 1978, the population of Haiti was estimated to be about 5.3 million. Of that total, roughly 17 percent or 900,000 are judged to fall within the 0 to 5 age group. Arbitrarily assuming that 30 percent of the 0 to 5 age group suffers from serious malnutrition would set the target population at 270,000 under 5 years of age.[10]

Mothers of the 270,000 will have to undergo nutrition education. Unfortunately, there are virtually no data in Haiti to indicate how many malnourished under 5 year olds one mother may have.[11] For the purposes of

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9. Second degree is 60-74% of normal weight for age according to the Gomez classification, while third degree is under 59.9% of normal weight for age -- normal being based on the Boston/Harvard standard. The GOH has not established criteria for a target population. The nutritionally vulnerable group of women (i.e., pregnant and nursing women) is not included among this group.

10. See Joyce M. King, "An Evaluation of BON-AID Centers for Education and Nutrition Rehabilitation" January, 1979.

11. Discussions have usually assumed the number of siblings that will eventually benefit (at some future date) from an older child enrolled at a center to be three. See, Webb, et.al., "An Evaluation...", J. Trop. Pediat. Envirn. Child Health. 21:7, 1975, and Berggren, W.L,, "Evaluation of the Effectiveness of Education & Rehab. Centers, Mt. Kisco, N.Y., Proceedings..., 1971-72,p.84.

this paper, it shall be arbitrarily assumed that each enrolled child will have one younger malnourished sibling at home. It is also assumed that this sibling will benefit from the mother attending the center. Because two malnourished children under five have been assigned to each mother (one child enrolled and one younger sibling at home), the number of mothers to be educated can be estimated to be around 135,000.

I. Population[12]

A. Number of Mothers and Children Served per Unit - where one unit equals one nutrition rehabilitation facility (i.e., one nutrition center, foyer or hospital) that has operated over a one year period.

1. Child

a. Capability - recuperative: the known maximum number of children one unit is capable of rehabilitating.

b. Capability - preventive: the speculative number of siblings that may benefit from an older child's enrollment in a nutrition facility. The number is computed based on the assumption that each enrolled child has one younger sibling.

c. Actual - recuperative: the actual number of children that one unit is known to be rehabilitating.

d. Actual - preventive: assuming that each child a center is known to be rehabilitating has one younger sibling at home that will benefit from the education received by its mother.

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12. The information presented under Roman Numerals I - IV are explanations of terms used in the Cost-Effectiveness Table on page 14a. See Annex 2 for the derivation of population served by each program strategy.

2. Mother

a. Capability - the maximum number of mothers that one unit (facility) is capable of educating.

b. Actual - the actual number of mothers that one unit is educating.

B. Number of Units Required to Rehabilitate Target Population

1. Capability - the target population (children only) divided by the maximum number of children one unit is capable of rehabilitating during one year.

2. Actual - the target population (children only) divided by the actual number of children one unit rehabilitates during one year.

II. Costs[13]

A. Cost per Unit

1. Recurrent - per annum cost of operating one unit. Assumes the unit will operate continuously during the year (i.e., the maximal number of cycles, sessions or promotions are held).

2. Capital - the cost of setting up one nutrition center per year. Capital costs are incomplete or not available for CWS centers and Projet Integré centers and foyers.

B. Total Costs - (recurrent only): the total cost required to serve the target population of malnourished children (in terms of recurrent expenditure), equals the cost per unit times the number of units required.

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13. See Annex 1, for the derivation of costs and budgets used.

C. Cost (recurrent) per Child Being Rehabilitated

1. Capability - Equals the total cost of providing nutrition services to the target population divided by the target population. Assumes the maximum number of children that one unit is capable of serving.

2. Actual - Equals the total cost of providing nutrition services to the target population divided by the target population. Assumes the actual number of children that is enrolled in one unit.

D. Cost (recurrent) per Educated Mother

1. Capability - Equals the recurrent cost per unit (heading II.A.1.) divided by the maximum number of mothers one unit is capable of serving (heading I.A.2.a.).

2. Actual - Equals the recurring cost per unit (heading II.A.1.) divided by the actual number one unit serves (heading I.A.2.b.).

III. Effectiveness [14]

A. Change in Percent of Standard Weight for Age

1.% who gain - the absolute number of children who maintain zero weight for age (according to the Harvard standard) or gain, divided by the total number being rehabilitated.

2.% who lose - the absolute number of children who lose divided by the number of children being rehabilitated.

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14. See Annex 3 for the derivation and source of indicators used.

IV. Mortality[15]

A. Percent of Deaths within Program - the number of children enrolled who die divided by the total number being rehabilitated. Longitudinal data on mortality within the community a nutrition center is serving is available for the Projet Intégré and is presented below on page 21.

B. 1 - 4 Mortality - in areas where program is in operation.

2. Cost - Effectiveness of Alternative Strategies

As can be seen from the cost-effectiveness table on the following page, costs per child benefiting from a nutrition intervention strategy (assuming actual facility utilization rates) are highest for hospital rehabilitation. Next follows the CERN which also has the highest cost per mother enrolled. Comparing direct recurring costs (that is, omitting administrative costs) between strategies yields this summary (in order of decreasing magnitude) presented in the following table:

Strategy/Program	Cost per Child	Cost per Mother
1. Hôpital Albert Schweitzer	$250.00	-
2. Hôpital de l'Université	$147.00	-
3. CERN	$ 59.00	$119.00
4. HACHO	$ 39.00	$ 78.00
5. Projet Intégre Centre	$ 25.00	$ 65.00
6. Projet Intégré Foyer	$ 6.80	$ 16.80
7. CWS Center	$ 6.70	$ 16.80

15. See Annex 3 for the derivation and source of mortality indicators used.

COST-EFFECTIVENESS TABLE*
(U.S. Dollars)

dred to 1 Malnur.	II. COSTS								III. Effectiveness		IV. Mortality	
	A. Cost Per Unit		B. Total Cost (recurrent only)		C. Cost Per Rehabilitated Child		D. Cost Per Rhunted Mother		A. Change in Percent of Standard Weight for Age		A. Mortality Rate in Program	B. 1 - A Mortality
			1. Capability	2. Actual	1. Capability	2. Actual	1. Capability	2. Actual				
1. Actual	1. Recur.	2. Capital	(II.A.1.) x(I.B.1)	(II.A.1.) x(II.B.2.)	(II.B.1.) ÷ 270,000	(II.B.2.) ÷ 270,000	(II.A.1.) ÷ (I.A.2a)	(II.A.1.) ÷ I.A.2b)	1. % Who Gain	2. % Who Lose		
2250									71	29	1.3	NA
	7179	1456	9.2 M	16.1 M	34.0	59.0	68.0	119.0				
	1038	—	1.3 M	2.3 M	4.8	8.5	9.6	17.0				
	8217	1456	10.5 M	18.5 M	38.8	68.0	78.0	137.0				
2250									NA	NA	2.1	NA
	4720	5264	6.0 M	10.6 M	22.0	39.0	44.0	78.5				
	1282	—	1.6 M	2.9 M	5.9	10.7	12.0	21.5				
	6002	5264	7.7 M	11.5 M	28.0	50.0	57.0	100.0				
540									NA[1]	NA	NA	NA
	3360	135	1.5 M	1.8 M	5.5	6.7	11.1	16.8				
	110	-	.05M	.06M	.2	.2	.4	.6				
	3470	135	1.6 M	1.9 M	5.9	7.0	11.8	17.4				
1298									72	16.5	2.0	11.9
655	5210	458	5.8 M	6.7 M	21.5	25.0	43.4	65.0				
	2840	-	1.3 M	1.86M	4.8	6.8	14.2	16.8	89[2]	11	1.5	15.9
750	-	-	-	-	-	250.0	-	-	NA[3]	NA	24.0	NA
	-	-	-	-	-	147.0	-	-				
384									NA	NA	25.0	NA

M = Million

(ve merely a weight gain) has been reported in preliminary findings.

se to the presence of edematous children

) may enter a hospital for malnutrition will either

ia to totals due to rounding.

If total program costs are considered (assuming actual facility utilization rates), it could cost as much as $18.5 million over one year if malnutrition is to be "eliminated" by an expansion of the CERN program. An expansion of HACHO could cost somewhere in the neighborhood of $13.5 million, Church World Service (CWS) $1.9 million the Projet Integre foyer $1.9 million and the Projet Integre centre $6.7 million. Note, however, that these costs do not allow for possible economies of scale that could be realized from an expansion of program size. Also note that project costs assume 100 percent rehabilitation[16] of those who enroll and remain in a program for at least one cycle.

Cost differences can be explained partly by the program ingredients (although the goal -- children with improved nutritional status is the same). For example, hospitals receive only the most gravely ill children, and thus it is logical that recuperation costs and mortality rates will be higher. The hospital, however, does not educate mothers.[17] Another example is the CWS program. Emphasis is on educating the mother through demonstration and participation, and in providing supplementary feeding in the form of dry food distribution. Likewise, the foyer places in the forefront the mother and her education. Supervised supplementary feeding to meet 100 percent of needs is done on a selective basis (to failing and third degree malnourished only).

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16. Rehabilitation is defined as 92% weight for height, or movement from 2nd and 3rd degree malnutrition to first degree and normal status.

17. The exception to this is Hôpital Albert Schweitzer. After spending two weeks in an intensive care ward, children are sent to a special Ward III where services are similar to that provided by a nutrition center.

When project costs of various program strategies are broken down by component and expressed as a percent of the program's overall recurrent budget, no clear pattern emerges (see the table on the following page).

Unfortunately, many components of the Projet Intégré budget were not available, tending to make overall project costs smaller. This is also true of the CWS program. In any case, without exception, most project costs of the various programs went towards funding food[18] and salaries. CWS allocated the highest proportion of its budget towards food, but spent far less than other strategies towards salaries. The foyer on the other hand, spent more on salaries rather than on food.

Although an examination of project components within the CERN program does not reveal a disproportionate amount spent on any one particular item that significantly deviates from the pattern followed by other programs, the BON spends consistently more per project component than other programs. This can partially be explained by two factors: First, the BON CERN program is much larger in beneficiaries than other strategies examined. A larger program can, in turn, lead to two possible outcomes depending on how effective the planning is that takes place, the intensity of project ingredients (that is, the extent and magnitude of nutrition intervention activity), the extent

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18. Note that all costs of food supplied by each program, whether donated (i.e., Title II) or purchased locally, were included.

PROJECT COMPONENTS EXPRESSED AS A PERCENT OF TOTAL RECURRENT PROJECT COSTS BY PROGRAM

COMPONENT	PROGRAM				
	CERN	HACHO	CWS	PROJET INTEGRE	
				Foyer	Centre
1. Equipment/Utensils/ Furniture	1.8	5.8	0.0	1.4	4.0
2. Food	41.0	37.0	64.0	41.0	58.0
3. Drugs/Medications/ Vitamins	1.7	5.0	4.3	NA	NA
4. Rent	3.6	0.0	0.0	0.0	0.0
5. Transport (for superv. visits and supplies)	1.7	3.3	1.4	NA	NA
6. Training (basic & recyclage)	3.4	3.3	NA	NA	NA
7. Supervision (salaries)	4.4	4.6	2.6	NA	NA
8. (Other) Salaries					
- Total	45.0	48.0	29.0	54.0	36.0
- Central Admin.	11.3	21.0	3.1	NA	NA

NA = Not Available

of program centralization, and how the available resources are used. The first possibility is that as a program expands, the probability of waste, inefficiency and administrative oversight incrementally increases. The second possibility, however, is that increasing the size and scope of a program may bring economies of scale into play. Commodity inputs such as food will grow proportionally. Yet, considerable flexibility exists on the administrative/support side (i.e., transport, supervision and training). Expanding an on-going program horizontally does not necessarily dictate an enormous increase in financial allocations as a great deal of physical and administrative infrastructure is already in place.

Second, due to limitations in time, more effort was spent on gathering cost and budget data on the CERN than on other program strategies. In Haiti (as is true in most developing countries), the magnitude of program costs is simply not known unless the program is studied in great detail.

On the effectiveness side, there is no evidence of complete rehabilitation[19] of children enrolled in any nutrition intervention strategy with one apparent exception. A bare bones analysis of the CWS program indicated a rehabilitation rate of 23 percent of children enrolled.[20] Unfortunately, the raw data were not available and the

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19. Note that the Projet Integre uses the term "rehabilitated" to mean children who have enrolled and remained in a centre or foyer for longer than a specified length of time. The BON uses the term "beneficiary" to describe its enrolled children.

20. Marie Entienne Murassaint, "Rapport sur les Cliniques de Nutrition de Zero à Cinq Ans", Internal CWS Document, 27 October, 1978..

analyst out of town. Rehabilitation in this case referred to second and third degree malnourished children moving either to first degree or normal status. If these results withstand scrutiny, they are important additions to the body of knowledge regarding possible impact via dry food distributions. The BON CERN and the Projet Integre centre showed 71 and 72 percent of children maintaining weight for age at arrival or gaining. The foyer showed 89 percent enrolled maintaining or gaining. However, this number might be underestimated due to the shortness of the program time and the possible inclusion of some edematous children losing weight during the 12 day session (a period which could be too short for an upswing or gain in children initially losing water weight).

A decline in the 1 to 4 mortality rate over time has been cited by some researchers (particularly those connected with the Projet Integre) to indicate the impact of nutrition intervention strategies. Ideally, if a nutrition strategy is successful, not only a decline in the mortality rate of children enrolled in a program will be registered, but also the secondary, preventive impact of reducing mortality among younger siblings (due to better educated mothers) will be experienced.[21] With the exception of the Projet Integre, this kind of longitudinal data is not available. However, for comparative purposes, mortality rates among children either enrolled in a

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21. Dr. G. Berggren of the Projet Integre has indicated, however, that a decrease in mortality may cause less of a change in second and third degree malnutrition. That is, an intervention may not show an improvement in severe and serious malnutrition as dramatically as expected when mortality rates are affected very positively.

nutrition intervention program or admitted to a hospital is outlined in the cost-effectiveness table above (see heading IV.) Of course, the mortality rate of children treated for malnutrition in hospitals will be much higher as only the very gravely ill are admitted. Note that 24 and 25 percent of all children admitted to the Hopital Albert Schweitzer and the Hopital de l'Universite respectively, die of malnutrition. The BON CERN experiences the lowest level of mortality at 1.3 percent. The foyer is next at 1.5 percent, followed by the Project Integre center at 2.0 percent and HACHO at 2.3 percent. Mortality figures for CWS are not available.

With regard to other kinds of mortality data (particularly longitudinal) collected from areas where nutrition intervention programs have taken place, the Projet Integre has produced some interesting results.

Over a period of three years, data on 1 to 4 mortality as well as crude death rates and life expectancy were collected from three regions with three different types of nutrition intervention services.

First, in the Trouchouchou Region, only nutrition surveillance and counselling of mothers took place. This surveillance, however, had a double benefit; weight for age cards used by the agent communautaire to keep track of the child's nutritional status were simultaneously used as an educational tool for the mother. This was an extremely cost-effective measure; an instance where routine work performed by health agents also served an educational purpose.

Second, the mountaineous region of Meilleur had in addition to surveillance activities (during the first year), one year of counselling plus one year of foyers. Likewise, after one year of surveillance, the third region, Grand Goave, had two years of nutrition center

activity and counselling.

The observed trend in 1 to 4 mortality is summarized for the three regions in the following table:

Region	Year	
	Year 1	Year 3
1. Trouchouchou	13.7	13.6
2. Meilleur	26.9	15.9
3. Grand Goave	12.7	11.9

Note: The estimate for national 1-4 mortality is 26.6.

Source: G. Berggren, Projet Integre de Sante et de Population, Departement de la Sante Publique et de la Population, Division d'Hygiene Familiale.

At Trouchouchou, there was some improvement in the mortality rate of the 1 to 4 age group in spite of an existing drought that plagued the area. This led researchers to conclude that demonstration education of this type can at least protect against such phenomena as drought. On the other hand, both the Grand Goave and Meilleur Regions showed significant improvement (according to the researchers who conducted the test). The improvement in the mortality of the 1 to 4 age cohort in Grand Goave was evidenced despite a prevalent drought condition. However even when the drought is considered in the analysis, the improvement in the 1 to 4 age group at Grand Goave is far less dramatic than the reduction in mortality at the less costly foyers at Meilleur.

At Meilleur, data were also collected on life expectancy, which

showed an increase overtime in all age groups (from 48.8 years in year one to 62.6 years by year three). This increase indicates a general trend within the population served by foyers, thereby possibly mitigating the fact that only a small sample was taken.

Finally, data were also collected on the younger siblings of various children, some of which had been enrolled in a centre or foyer. It was found that the 1 to 4 mortality rate among younger siblings of children who had never attended a nutrition intervention program was 16. On the other hand, mortality among younger siblings of children who had attended a program was zero. The sample size used to derive this statistic may very well have been too small to draw any firm conclusions. Nonetheless, the results are interesting and need further investigation.

In sum, an examination of costs of rehabilitating children and educating mothers has revealed the CERN to be the most expensive nutrition intervention strategy, with little in the way of reliable data to demonstrate benefits (that is, statistically significant numbers of children who have recuperated to first degree or normal status) over time The Projet Integré foyer and the CWS center are the least costly. Again data are lacking, but some are available to indicate possible benefits in terms of lower 1 to 4 mortality, increased life expectancy and a recuperation rate of 23 percent for children enrolled at CWS centers. For cost-effectiveness, the foyer style is the most interesting. Projet Integré researchers are claiming that improvements in the nutritional status of children are as favorable (or better) for the foyer as they are for the rehabilitation center -- at a third of the cost. The small size of the study prohibites generalizations and many questions need to

be answered. For example: What impact did the drought at Grand Goave have on reducing the positive effect of nutrition centers on malnourished children? Is there some level of mortality due to malnutrition below which a community cannot fall without massive program inputs (hence, major financial commitments)?

In reviewing the breakdown of expenditures on project components (food, transport, etc.) for various program strategies, many more questions are raised that need to be addressed. What is the ideal combination of program ingredients that will produce the most cost-effective package? At 41 percent of total project costs, the foyer spends less on food than on salaries (54 percent). This can be compared to CWS which spends the bulk of its budget (64 percent) on food. Yet, both programs have similar results in terms of lower costs per "rehabilitated child and "educated" mother. What is the relative impact of say, the quality of personnel versus the quantity of food provided to the recipient? Nutrition education for the mothers is the key element of the mothercraft concept. Is the foyer training program for the mother more effective than the CERN's in teaching them to improve the nutritional status of their children? Finally, with regard to the CERN and other nutrition rehabilitation centers, is there some threshhold where a 1 percent increase in financial inputs no longer yields a 1 percent improvement in the nutritional status of malnourished children? And if so, is the CERN program too intensive to be cost-effective if expanded nationwide? The available longitudinal data collected from the foyers at Meilleur and the centers at Grand Goave, indicate that improvements in 1 to 4 mortality are no better in areas served by expensive centers as they are in areas served by foyers. Further studies are needed to determine whether these results are statistically significant nationwide. If they prove to be significant, the foyer is the most cost effective method of promoting nutrition intervention activity.

3. Cost-Effectiveness of Theoretical Approaches to Nutrition Intervention

Already examined are nutrition program strategies that are operating (or have operated) in Haiti. However, several strategies exist that are still in the stage of theoretical development, and hence remain largely untested. Because they are untested, there are no impact data available to indicate benefits. However, these strategies have important implications as far as future nutrition program planning is concerned, and they should be discussed.

The first consists of integrating nutrition activities into a rural health delivery system (RHDS). The core idea is to have auxiliaries operate out of dispensaries and agents de sante out of village communities, in order to promote nutrition activities. Such activities include nutrition education through foyer-type demonstrations, surveillance and data gathering. Some delivery of food supplements can take place where needed, and in those areas where groups or severly malnourished children are identified, a CERN-type program can be put into operation.

The objective of the RHDS is to provide basic health services to 70 percent of the population, or to reach 2.5 million people. Such a target would require about 250 dispensaries, each with a "nutrional sub-system" that might for conceptual purposes, be described as the following: Assume a dispensary will cover a population of 8,000-10,000, requiring four agents de sante. Surveillance (weighing and measuring) will take place for the (approximately) 17 percent of the population under 5 years -- roughly 1,400-1,700. This would require about 9-12 days per year for a team of three, capable of reaching 150 children at one time (taking into account travel time).

In addition, in the dispensary area there will be approximately 1,200-2,000 households (or an average of 1,600). If foyer sessions were held for groups of 10-20 women at 20 sessions per year, it would take roughly 5 years for one auxiliary to cover all women. Days of labor required for the operation of 20 foyer sessions by one auxiliary are 240 (assuming 12 days per session).

Arbitrarily assuming that 4 percent of under 5 year olds are severely malnourished would mean roughly 60 children need to undergo nutrition rehabilitation at a center. Three cycles of 20 children each would suffice.

Since cost data on such a program are nonexistent, any estimates derived would be purely speculative. However for planning purposes, using the type of framework outlined above, this can be easily done. Including both capital and recurring costs, a nutrition intervention component in the RHDS could cost around $17 million over a 5 year period (excluding costs of training), or roughly $3.4 million per annum.

The second type of strategy involves the dry distribution of supplementary food (either provided free or sold for a small renumeration) to combat malnutrition. No data are available on the impact of supplementary feeding programs in Haiti.[22] What is known is that food rations are sometimes "diluted" within the family (that is, the targeted malnourished child is not the sole recipient), and is even sometimes sold.[23] The amount of food that should be alloted per family to ensure that the needy child gets its minimum precent of daily protein and calorie requirements (as defined by specific norms) has not been established.

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22. According to the PAHO Advisor to the Bureau of Nutrition, only one study (done in Brazil) is available on this subject.

23. According to the PAHO Advisor to the Bureau of Nutrition.

In Haiti, the distribution of Akamil in pharmacies as a "medicine" against malnutrition has been attempted. The Akamil is sold for a small fee, enough to allow for repurchasing of additional supplies on the local market. In one area Akamil has been produced[24] and sold locally by a health center and dispensary. Results are scanty and preliminary, but indicate that mothers do return weekly to purchase the week's supply of Akamil.

Other ideas not yet tested include, (1) having the agent de sante produce and distribute Akamil to families in his or her community (either by selling it or distributing it as free medicine), and (2) selling subsidized powdered milk on the local market, thus making it available to mothers who could otherwise not afford to buy it. Costs of such programs are only speculative, however, some data are available (see Annex 4). Note that these costs are low as the Akamil ration (including Akamil plus some other commodity such as oil and sugar) does not provide 100 percent of daily protein and calorie requirements to children under 5 years. This is based on the debatable assumption that Akamil is a supplement and therefore should not supply the 100 percent requirement.

F. Conclusions

The stated objective of this analysis is to examine the cost-effectiveness of the BON CERN versus other nutrition intervention programs. Some general conclusions can be drawn, however, an important preface should be mentioned beforehand. If the goal of development activity is to "reach out" to the most impoverished people and provide them with the basic goods and services (such as food, potable water, health, etc.) that they lack, then almost

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24. "Production" means buying corn and beans on the local market and grinding them together with a simple hand mill.

any strategy designed to accomplish this goal will be expensive. The world's impoverished, usually found in rural areas, are the most difficult, least accessible and most costly segment of the population to reach. Finding cost-effective solutions to achieve this goal will not always be feasible.

With regard to the BON CERN program, it is apparent from the preceding analysis that dollar for dollar, the program is more costly than others in terms of benefits realized. By virtue of its size and level of intensity with regard to malnutrition intervention, it is bound to be more expensive. However, with every increase in financial inputs allocated to the program, an equivalent level of additional output in terms of nutrition rehabilitation activity should occur. At present, this is not happening. Thus, if benefits do not accrue to financial inputs, the intensity of the CERN program becomes a liability rather than an advantage.

Based on the scanty data, it seems that the Projet Intégré foyer and the CWS center are the most cost-effective program strategies. Benefits derived from these interventions seem to be as favorable (if not more so) as those derived from the more expensive nutrition rehabiliation centers. However, before any firm conclusions can be drawn, further investigations and testing need to be done. Many questions need to be answered regarding what kinds of strategies would have the greatest impact on malnutrition under differing geographic, climactic and socio-economic conditions.

To operate in a more cost-effective way, the BON should diversify its program activity. However, for two reasons this does not imply abandoning the CERN program. First, more research needs to be done as stated above. Under certain circumstances, the CERN might be the only strategy capable of providing effective nutrition rehabilitation and education services. Second, a great deal of physical and administrative infrastructure associated with implementing CERN operations has already been established and is functioning. Internal revisions can be made that would in the long run, prove to be less costly than starting completely new activity.[25]

The important conclusion that can be drawn from this analysis is that a cost-effective nutrition intervention package can be constructed according to need, by taking various elements or "ingredients" from different programs and putting them together in an optimal way. For example, a general system of surveillance which seems to have beneficial impact can be instituted. Low cost foyers are an extremely effective method of promoting nutrition education and lowering the rate of 1 to 4 mortality. Severely malnourished children can be provided with supplementary feeding either by dry food distribution (Akamil, Wheat Soya Blend,

25. For example, the CERN should be used more intensively. That is, the number of cycles per year should be increased and the center should be more mobile to avoid stagnation. For further and more detailed recommendations, refer to Joyce M. King, "An Evaluation of BON-AID Centers for Education and Nutritional Rehabilitation", January 1979.

Corn Soya Blend, Kwash milk, etc.) or fed on site by a nutrition rehabilitation center. This center must be a mobile, dynamic institution, responsive enough to move to areas of greatest need. Equipment, utensils and other commodities can be shifted between the ingredients (from the foyer to the center, or even to surveillance activities) according to what ingredient is being focused on. Eventually, when the RHDS becomes a reality, the integration of rural health and nutrition activities will provide an important framework -- simultaneously attacking in a multidisciplinary fashion the nutrition problem on many fronts.

In sum, the more "intensive" are program components, the more expensive will be the program. However, a program can encompass many elements with varying degrees of intensity. The objective is to find the optimal combination of program ingredients. If so, the outcome will be an overall more cost-effective nutrition intervention package.

ANNEX ONE

COST ESTIMATES* OF

NUTRITION INTERVENTION STRATEGIES

Contents:

* Costs are per annum and are based on 1977-78 budget estimates. All costs are per facility except in the following cases: (1) Foyer - costs are based on 20 sessions (the estimated average number held during 12 months by one nutritionist); (2) Hospital Rehabilitation - costs are per patient per day x the average length of stay.

BON-CERN

	1./ Cost Category	2./ K or R	$ per Month	$ per Year	% Time Allocated to CERN	Cost Per CERN
I. PERSONNEL						
A. Community level						
1. Responsible (30) *3/	D	R	90	1080	100	1080
2. Responsible-Suppl. (3)	A	R	90	1080	100	108
3. Asst. Cook (30)	D	R	40	480	100	480
Subtotal						1668
B. District level						
1. Aux Nutritionist (28) *3/	D	R	100	1200	100	1120
C. Central level 4./						
1. Central Staff*						
a. Director (1)	A	R	400	4800	25	40
b. Asst Director (1)	A	R	350	4200	40	56
c. Administration (1)	A	R	300	3600	50	60
d. Accountant (1)	A	R	250	3000	25	25
e. Other (10)	A	R	810	9720	40	130
2. Research/Evaluation/ Statistics(3)*	A	R	480	5760	100	192
3. Education & Training 5/ (4)	A	R	730	7760	80	207
4. Supervision (2)*	A	R	550	6600	100	220
Subtotal						930
TOTAL						3718

	Cost Categ.	COST PER CERN K	COST PER CERN R
II. Commodities			
A. Equipment and Furniture 6./			
1. Cooking Utensils 7./	D	260	130
2. Furniture	D	325	
3. Materials	D	576.4	20
Subtotal		1161.4	150
B. Supplies/Misc 8./			
1. Food @ $250/month	D		3000
2. AK 1000 @ $30/month	D		360
3. Vitamins/drugs @ $12/month	D		144
4. Rent @ $25/month	D		300
Subtotal			3804
TOTAL		1161.4	3954
III. Transport			
A. Fuel for supervisory visits *9./ 10./	D		57
B. Transport of equip & supplies *11./	D	50	
C. Maintenance & repair of vehicles	D		80
TOTAL		50	137

	Cost Categ.	COST PER CERN	
		K	R
IV. Training			
A. Per diem for responsable @ $8/day			
1. Basic training (30 days)	D		
2. Recyclage (5 days)	D	240.00	40
B. Honorarium for outside teaching staff @ $5/hr (during basic training) *12./	D	1.50	
C. Materials 13./	D	3.00	—
TOTAL		244.50	40
V. Supervision*			
A. Per diem			
1. 5 professionals @ $15/day x 96 days	D		240
2. 5 para-professionals @ $8/day x 24 days	D		32
3. 3 drivers @ $8/day x 120 days	D		96
TOTAL			368
TOTAL COSTS PER CERN 14./		CAPITAL	RECURRENT
	D	1456	7179
	A	-	1038
TOTAL		1456	8217
GRAND TOTAL (K + R)		9673	

Notes: * indicates costs or salaries are prorated over 30 CERNS

1. D = Direct Costs; A = Administrative Costs

2. R = Recurrent Costs; K = Capital Costs

3. Total salary of which only part is paid by the BON.

4. BON staff estimate (provided by E. LaRoche) of time central staff allocates to the administration of the CERN.

5. Nutritionist in this section works only 8 months per year

6. See list of equipment and furniture in Attachment A at the end of this Annex. Costs for item prices not specified were estimated by E. LaRoche, BON.

7. Cooking utensils are outlined in Attachment A. The cost of replacement has been guesstimated by the author to be approximately $130.

8. Costs of rent and food per month are hypothetical. Actual budget allocations for food are $200 and $15 for rent. Prices for food and rent vary throughout Haiti. However, E. LaRoche has indicated (from what BON responsibles report) that prices are such that $250 and $25 per month for food and rent respectively are reasonable estimates of what is required. $250/month for food includes the cost of transport estimated to be $10 per trip - one trip per month.

9. Assumes one trip is sufficient to cover 4 centers and 80 gallons are necessary for one trip; 7.5 trips, therefore equal one supervisory cycle X 3 cycles per year. Total travel cost = $1710, or $57 (divided by 30 CERNS).

10. Assumes furniture is purchased locally and is transported to next location when CERN is moved (truck rental estimate = $50).

11. Assumes 60% of 1977-78 vehicle costs (@ $4000) is allocated to the logistical support of CERNs.

12. List of professors (and teaching schedule) is located in Attachment B. Y. Papillon has supplied the estimate on honorarium paid. this amount has been divided by 30. Outsiders are indicated by *

13. Estimate of material costs supplied by Y. Papillon, BON.

14. Does not include the Agriculture Extension program of which a separate evaluation is being prepared.

ATTACHMENT A

List of CERN materials, untensils and furniture:

CENTRE DE RECUPERATION ET D'EDUCATION NUTRITIONNELLE
DE .....

DATE D'OUVERTURE (ou de reouverture) .....
NOM DU OU DE LA RESPONSABLE .....

USTENSILES DE CUISINE

3 tapis en plastic
1 grosse et une moyenne chaudière
2 bombes
2 cuillères alluminium
1 fourchette alluminium (grande)
3 cuillères en bois
2 seaux en alluminium
1 baignoire (grande)
1 ouvre-boite
1 couteau cuisine
2 grandes passoires, 1 petite
2 drums (pour l'eau)
2 petites drums pour grains
2 larges paniers
36 assiettes alluminium
36 timballes
2 pots à eau en plastic
3 grandes serviettes
4 matelas
1 lampe
3 casseroles en alluminium
3 réchauds
1 canari
2 couvres-plats
6 verres et 1 cabaret
6 tasses et soucoupes
1 cafetiere
6 petites cuillères à café
1 sucrier
36 cuillères en alluminium
6 tabliers
6 torchons
4 draps (pour berceau)
1 peigne
1 brosse
1 réveil
1 rape
1 passe-vite
1 pilon (pour epices)

Estimated cost of Cooking Untensils:
$260.00
Cost of Replacement (@ 50%) =$130.00

Attachment A (continued)

CENTRE DE RÉCUPÉRATION ET D'ÉDUCATION NUTRITIONNELLE

De .....

DATE D'OUVERTURE (ou de recouverture) .....

NOM DU OU DE LA RESPONSABLE .....

MOBILIER

	Hauteur	Largeur	Epaisseur	Longueur
1 buffet	2m 03	1m 45	0m 57	
1 bufiet	1m 06	1m 20	0m 41	
2 tables à manger	0m 54	1m 13		2m 36
4 bancs	massive 0m 31 / double 0m 39	0m 28		2m 43
1 table de cuisine	0m 78	0m 80		1m
1 bureau avec 2 grands tiroirs à droite	1m	1m		1m20
1 lavabo	0m 90	0m 45		0m 62
4 bureaux simples ou 3 simples et 1 à 2 étages	0m 77	0m 83		1m 10

2 paires de chaises pour visiteurs et bureau

1 table avec un trou au milieu pour recevoir le filtre à eau (canari), à deux étages 1 pour filtre et l'autre pour recipient devant recevoir l'eau filtrée:

	0m 90	0m 45	0m 60

Estimated Cost of Furniture: $325.00

Materials

Toise & cuiseur	1	$15.00
Flipchart	1	30.00
Flanelographe	1	10.00
Materiel stimulation psychomotrice: ballon, crayon, papier, cahiers, etc.		20.00
Refrigerateur a Kerosine	1	300.00
Canaris	1	1.00
Drums pr. grains	3	15.00
Drum p. l'eau	1	15.00
Latrine	30	20.00
Balance type Philippines	1	35.00
Infantometre	1	25.00
Ruban Metrique	1	.40
Handmill	1	60.00

Total Estimated Cost of Materials: $576.40

BEST AVAILABLE COPY

ATTACHMENT B

DEPARTEMENT DE LA SANTE PUBLIQUE ET DE LA POPULATION

BUREAU DE NUTRITION

COURS DE FORMATION DES RESPONSABLES DES CENTRES DE NUTRITION

Du 1er au 23 décembre 1976

Local: Auditorium Ecole Nationale des Infirmières

Objectifs: Former et recycler les responsables des Centres de Nutrition pour une meilleure exécution des activites.

Jours	Heures	Sujets	Responsables
Mecredi 1	9h - 10h	Presentation des participants Mot de bienvenue	Dr. Toureau
	10h - 10h45	Objectifs du cours	" " "
	11h - 12h	Distribution du programme	" " "
Jeudi 2	9h - 10h	Alimentation-Nutrition Définitions	Dr. Lamothe
	10h - 10h45	Anatomie du tube digestif	Dr. Amédée
	11h-- 12h	Physiologie du tube digestif	" " "
	12h - 1h	Les trois groupes d'aliments Définition-fonctions	Ag. Pellerin
	1h15- 2h	Revision et discussion	Constant et Murassaint
Vendredi 3	9h - 10h	Les Protéines: Definition-fonction-sources supplementation	Dr. Amdée
	10h - 10h45	Les Lipides. Définition-fonctions-sources	Ag. Pellerin
	11h - 12h	Les Glucides: Définition-fonction-sources	" " "
	1h15- 2h	Révision-Discussion	Constant et Murassaint

ndicates outside teaching staff(paid Honorarium).

Jours	Heures	Sujets	Responsables
Lundi 6	9h - 10h	Les principales vitamines fonctions-sources	Dr. Toureau
	10h - 11h	Mineraux: Principaux mineraux fonctions-sources	" " "
	11h15- 2h	Alimentation suivant l'âge et l'etat physiologique	Y. Papillon
Mardi 7	9h - 11h45	Méthode d'éducation a) Notions élementaires de communication b) Methode d'éducation nutritionnelle: la causerie, la visite domiciliaire	J. Agenor " " "
	1h - 2h	Démonstration pratique de causerie Révision Discussion	Constant et Murassaint " "
Mercredi 8	9h - 12h	Stage pratique sur l'éducation Présentation des sujets par les stagiaires-Discussion	
	12h - 2h	Comment préparer le materiel éducatif	
Jeudi 9	9h - 10h	Malnutrition Les principales carences nutritionnelles en Haiti, leur prévalence	Dr. Toureau
	11h15- 2h	MIC: Definition-causes-conséquences. Comment detecter la MIC? Mesures anthopométriques: poids-taille; signes cliniques	Dr. Amédée " " "
Vendredi 10	9h - 10h	Avitaminose A: Definition Causes Comment detecter l'Avitaminose A?	Dr. Toureau
	10h10-11h	Anemies nutritionnelles Ariboflavinose Définition-causes Comment detecter les anémies nutritionnelles, l'ariboflavinose	Dr. Lamothe " " "
	11h15- 1h	Comment determiner l'état nutritionnel d'un individu Graphique Poids/Age-Explication	Dr. Donas
	12h15- 2h	Révision-Discussion	Constant et Murassaint

Attachment B (continued)

Jours	Heures	Sujets	Responsables
Lundi 13	9h - 12h	1er stage pratique sur les mesures anthropométriques Poids/taille groupe de travail	Dr. Amédée
	2h - 4h	Stage pratique sur l'utilisation du graphique Poids/Age	Dr. Donas
Mardi 14	9h - 10h	Les causes de la malnutrition	Dr. Toureau
	10h - 11h30	Que peut-on faire pour prévenir la malnutrition?	
	10h - 11h	a) Soins précoces et éducation	Y. Papillon
	11h - 12h	b) Hygiène (latrines-eau)	D. Neff *
	12h - 1h	c) Planification familiale	Dr. Lamothe
	2h30-3h30	d) Immunisation	Dr. Amédée
	3h30-4h30	e) Production alimentaire	Agr. Fleuricot
	4h30-5h30	f) Production AK-1000 Conservation des aliments	Mme M. Depestre *
Mercredi 15	9h - 10h	Rôle du Centre de Nutrition	Dr. Fougère
	10h15- 2h	Administration du Centre de Nutrition Personnel-Responsabilité du personnel-Horaire de travail-Comptabilité	M. R. Larose
Jeudi 16	9h - 12h	Rapports des activites dans les Centres de Nutrition Présentation et explication des formulaires	Dr. Amédée
	2h - 4h	Pratique des formulaires	
Vendredi 17	9h - 11h	Rôle de la responsable du Centre de Nutrition dans la communauté	J. Alexis *
	11h15-12h15	Critères d'ouverture et de fermeture d'un Centre de Nutrition	Dr. Lamothe
	2h - 4h	2ème stage pratique sur les mesures anthropométriques	Dr. Toureau

Attachment B (continued)

Jours	Heures	Sujets	Responsables
Lundi 20	9h - 2h	2ème stage pratique sur l'éducation Développement de sujets	
Mardi 21	9h - 2h	2ème stage pratique sur l'utilisation des formulaires	
Mercredi 22	9h - 11h	Discussion des groupes	
	11h15- 1h	Questionnaire	
	1h - 2h	Clôture	
Jeudi 23		Arbre de Noel au Bureau de Nutrition	

ATTACHMENT C

BUREAU OF NUTRITION: TABLEAU RECAPITULATIF DU BUDGET 1977-1978

1.- PERSONNEL SALARIES			
1.01- Niveau Central	$.	25.320.00	
1.02- Recherche Eval. & Statist.	"	5.760.00	
1.03- Education & Entraînement	"	7.760.00	
1.04- Supervision	"	6.000.00	
1.05- Agrand. Bur. Nut.	"	8.000.00	
1.06- Niveau Périphérique	"	88.720.000	
TOTAL SALAIRES DU PERSONNEL		142.760.000	
2.- EQUIPEMENT & FOURNITURES			
2.01- Niveau Central	$.	18.990.00	
2.02- Niveau périphérique	"	3.640.00	
2.03- Matériel pr. Centres	"	10.740.00	
2.04- Matériel pr. Dispensaires	"	59.000.00	
2.05- Matériel pr. CEMI	"	13.280.00	
TOTAL EQUIPEMENT & FOURNITURES			$. 115.350.00
3.- FONCTIONNEMENT CEMI	$.	81.720.00	$. 81.720.00
4.- PRODUCTION LOCALE ET SUPPLEMENTATION ALIMENTAIRE			$. 65.142.00
5.- AUTRES DEPENSES			$. 65.142.00
5.01- Supervision	$	11.040.00	
5.02- Entraînement & recyclage	"	36.330.00	
5.03- Réparation & entretien voitures	"	4.000.00	
5.04- Réparation & Agrand. Bur. Nut.	"	31.000.00	
TOTAL AUTRES DEPENSES			$. 82.370.00
6.- PROJETS AGRICOLES	$		$. 30.000.00
TOTAL OBLIGATION 1977-1978			$. 503.342.00

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PERSONNEL

1.- NIVEAU CENTRAL

Directeur	1	$.400.00	$. 400.00	$. 4.800.00
Assist. Directeur	1	" 350.00	" 350.00	" 4.200.00
Administrateur	1	" 300.00	" 300.00	" 3.600.00
Comptable (Achat & Appro.)	1	" 250.00	" 250.00	" 3.000.00
Secrétaire	1	" 150.00	" 150.00	" 1.800.00
Dactylographes	2	" 100.00	" 100.00	" 2.400.00
Chauffeurs	4	" 80.00	" 320.00	" 3.840.00
Lessiveur	1	" 60.00	" 60.00	" 720.00
Manoeuvre	1	" 40.00	" 40.00	" 480.00
Jardinier	1	" 40.00	" 40.00	" 480.00
TOTAL PERSONNEL INT.	14		2110	$ 25.320.00

PERSONNEL LOCAL A SANITHERE

Chef de Section [illegible]	1	$ 300.00	$. 300.00	$. 3.600.00
Statisticien	1	" 100.00	" 100.00	" 1.200.00
Comptable [illegible]	1	" 80.00	" 80.00	" 960.00
TOTAL PERS. LOCAL SANITH.	3		480.	$. 5.760.00

PERSONNEL D'ENCADREMENT

Chef de Section MD I.P.	1	$.250.00	$. 250.00	$. 3.000.00
Nutritionniste	1	" 250.00	" 8 mois	" 2.000.00
Infirmière	1	" 150.00	" 150.00	" 1.800.00
Dessinateur	1	" 80.00	" 80.00	" 960.00
TOTAL ED. & ENTRAI.	4		730	$. 7.760.00

SUPERVISION

Chef de Section MD	1	$.300.00	$. 300.00	$. 3.600.00
Nutritionniste	1	" 250.00	" 250.00	" 3.000.00
TOTAL SUPERVISION	2		550.	$. 6.600.00

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Attachment C (continued)

AGRICOLE

Chef de Section Agr.	1	$. 300.00	$. 300.00	$. 3.600.00
Agronome attaché	1	" 250.00	"	" 3.000.00
Agronome attaché	1	" 250.00	" 8 mois	" 2.000.00
Total Section Agricole	3			$. 8.600.00
TOTAL NIVEAU CENTRAL	28			" 54.040.00

B.- NIVEAU PERIPHERIQUE

I.- NIVEAU REGIONAL

Nutritionnistes	2	$. 250.00	$. 8 mois	$. 4.000.00

II- NIVEAU DISTRITAL .....

Auxiliaire Nutritionniste ..	28	$.- 40.00	$1.120.00	$. 13.440.00

III-NIVEAU LOCAL

Resp. CERN	30	$. 80.00	$2.400.00	$. 28.800.00
Resp. Suppl. CERN	3	" 80.00	$ 240.00	" 2.880.00
Cuisinière Assist.	30	" 40.00	"1.200.00	" 14.400.00
Agent d'entretien Ag.....	30	" 70.00	"2 100.00	" 25.200.00
TOTAL PERSONNEL N.P.	123			$ 18.720.00
TOTAL PERS. NIVEAU C.P.	151			" 142.760.00

..././/...

Attachment C (continued)

EQUIPEMENT & FOURNITURE

A.- NIVEAU CENTRAL

ITEM	N. D'unit.		Prix vente		TOTAL
Ronéographe appareil	1	$.	800.00	$.	800.00
Machine à écrire	1	"	800.00	"	800.00
Projecteur ... diaposit.	1	"	200.00	"	200.00
Papier (cour...) Rames	240	"	10.00	"	2.400.00
Encre (Cart.)	60	"	2.00	"	120.00
Stencils simples (Btes.)	10	"	25.00	"	250.00
Stencils Elect. (Bte.)	2	"	35.00	"	70.00
Bureaux	5	"	150.00	"	750.00
Chaises	5	"	20.00	"	100.00
Classeurs	4	"	200.00	"	800.00
Gazoline (gallons)	10000	"	.97	"	9.700.00
Divers					3.000.00
TOTAL EQUIPEMENT & FOURNITURE B.C.				$.	18.990.00

B.- NIVEAU PERIPHERIQUE

handwritten	2		60.00		120.00
Balance pr. enfants	2	$	100.00	$	200.00
Infantomètre	2	"	20.00	"	40.00
Son diapositives mal...	1	"	5.00	"	5.00
Hémoglobinomètre	1	"	400.00	"	400.00
Flipchard	2	"	30.00	"	60.00
Flanelographe	2	"	10.00	"	20.00
Affiches	2	"	20.00	"	40.00
Matériel démonstration	1	"	25.00	"	25.00
Capsules 200000U vit. A	5	"	8.00	"	40.00
Capsules fer avec folater 10	10	"	8.00	"	80.00
TOTAL par Hôpital				"	910.00 + 120.00 = 1030.00
TOTAL D'HOPITAUX	4	"	910.00	"	3.640.00

.../.../...

Attachment C (continued)

MATERIEL POUR UN CENTRE DE SANTE SANS OU AVEC LITS

ITEM	N. D'Unité	Prix Unité	TOTAL
handcuff	1	60.00	60.00
Balance pr. enfants	1	$. 100.00	$. 100.00
Balance adulte avec toise	1	" 150.00	" 150.00
Hémoglobinomètre	1	" 400.00	" 400.00
Flipchart	1	" 30.00	" 30.00
Flanélographe	1	" 10.00	" 10.00
Affiches	4	" 0.25	" 1.00
Matériel de Démonstration	1	" 25.00	" 25.00
Courbe poids/âge en bristol avec sachet plastique	2000	" 0.05	" 100.00
Capsules Vit. A 200.000 U 12 btes. 500 cap. chaque		" 8.00	" 96.00
Capsules fer et folate 10 btes. 1000 cap.		8.00	" 80.00
		TOTAL	" 992.00 + 60.00 = 1052.
NOMBRE DE C. DE SANTE	20	TOTAL	$. 19.840.00

MATERIEL POUR UN DISPENSAIRE

moulin à main	1	60.00	60.00
Balance pr. enfants	1	$. 800.00	$. 100.00
Balance adulte avec toise	1	" 150.00	" 150.00
Flipchart	1	" 30.00	" 30.00
Flanélographe	1	" 10.00	" 10.00
Affiches	4	" .25	" 1.00
Matériel démonstration		" 25.00	" 25.00
Courbe de poids/âge bristol avec sachet plastique	2000	" 0.05	" 100.00
Capsules Vit. A 200000 U 12 btes. 500 caps. chaque		" 8.00	" 96.00
Capsules fer avec folates 10 btes. 1000 cap.		" 8.00	" 80.00
		TOTAL	592.00 + 60.00 = 652
			8. 59.200.00

..././/...

Attachment C (continued)

5.-	ENQUETE & SUPERVISION (PAR DIR.)			
5.01	5 pers. 8 jours/mois à $ 15.00	$. 7.200.00		
	pers. 2 jours/mois à 3.00	" 960.00		
	3 chauffeurs 10 jours/mois 8.00	" 2.880.00		
	TOTAL DEPENSES ENQUETE & SUPERVISION	$.		11.040.00
5.02	Entraînement du Personnel N.D.			
5.02.1	Sessions pr. médecins & infirmières			
	Séjour 15 x 30 x 5	$. 2.250.00		
	Frais de déplacement 3 x 30	" 90.00		
	Déplacement personnel Méd. pr. Ses.	" 2.340.00		
	Frais pr. 6 Sessions		$. 14.040.00	
5.02.2	Session Personnel Paramedical			
	Séjour 8 x 30 x 5	$. 1.200.00		
	Frais de déplacement 3 x 30	" 90.00		
	Frais par Session	" 1.290.00		
	Frais des 16 Sessions pers. param.		$. 20.640.00	
5.02.3	Recyclage responsables CERN (P.au-P.)			
	Séjour 8 x 33 x 5	$. 1.320.00		
	Transport 10 x 33	" 330.00		
	Frais recyclage	$	$. 1.650.00	
	TOTAL ENT. & RECYCLAGE			$.36.330.00
5.03	REPARATION & ENTRETIEN (VOITURES)			" 4.000.00
5.04	BATIMENT (Réaménagement Bureau Nutrition)			" 31.000.00
	TOTAL AUTRES DEPENSES			" 82.370.00
6-	PROJETS AGRICOLES			" 30.000.00

Source: Bureau of Nutrition, Ministry of Health and Population, Port au Prince, Haiti.

ATTACHMENT D

VARIOUS ESTIMATES OF MONTHLY FOOD BILLS

AT NUTRITION REHABILITATION CENTERS

1. Responsable estimates of amount necessary to provide adequate food = $250/mo.

2. J. King, "Price for Center Menu, February 1977", Analysis and Compilations.....

   Price = $216/Mo (Feb 1977 prices)
   Inflated @ 20% per annum = $285

   - does not supply 100% of calories (59% at Sans-Fil 61% at Portail Leogane) Supplies 97% protein requirement (Sans-Fil) and 130% at Portail Leogane.
   (See Tables 5, 6 (a. and b.), and F in Attachment D).

3. Y. Papillon, Bureau of Nutrition, (Port au Prince food prices) Menu at St. Michel's orphanage.

Per Day:	Breakfast:	6 lbs. WSB	$1.50
		2 lbs. Sugar	.40
		4 oz oil	.20
			2.10
	Snack:	1 fruit	1.00
	Dinner:	6 lbs Rice	1.50
		3 lbs Peas	.75
		vegetables	.45
		16 oz oil	.80
		2 lbs Meat	1.60
			5.10
	3 P.M.:	Milk	1.20
		Sugar	.40
		Bread	.40
			2.00

Total = 10.20 per day x 4 days = $40.80 per week

plus $6.00 per week for charcoal

Total: $46.80 x 4 weeks = $187.2

Note: If meals were provided 5 instead of 4 days per week, then monthly food bills would total $228.00

TABLE NO. 5

PRICE FOR CENTER MENU, FEBRUARY 1977

Food	Purchase unit	Gourde Price unit	Quantity weekly	Weekly price in gourdes
Corn Flour	1 lb	0.40	6 lbs	2.40
Corn in kernels	1 large marmite*	2.90	8 Lg. Marm.*	23.20
Pulses	1 large marmite*	6.30	4 Lg. Marm.*	25.20
Millet	1 large marmite*	3.40	5 Lg. Marm.*	17.00
Pigeon peas	1 lb	1.10	4 lbs	4.40
Meat and liver	1 lb	3.00	8 lbs	24.00
Kippered herring	unit	1.25	4 units	5.00
Eggs	3 units	1.00	1 dozen	3.00
Powdered milk	1 lb	6.50	14 lbs	91.00
Red (brown) sugar	1 lb	1.10	12 lbs	13.20
Syrup or sugarcane	1 package	2.00	3 packages	6.00
Oil	1 Kola (bottle)	1.50	9 Kolas	13.50
Carrots	4 average	1.00	8 average	2.00
Green leaves	1 bunch	1.00	12 bunches	12.00
Cushaw (pumpkin)	1 average	2.50	2 average	5.00
Green vegetables	dif. units	2.00	twice	4.00
Green peas	1 lb	1.00	5 lbs	5.00
Sweet potato (yel.)	3 average	0.50	10 average	1.50
Plantains	3 average	1.00	9 average	3.00
Biscuit	1 platter	1.00	4 platters	4.00
Peanuts	1 large marmite*	3.00	2 large marm*	6.00
Total			Gourdes (G)	270.40
			or $	54.08

Note: $216.00 inflated to 1978 prices (@ 20% per annum) is roughly $285.00.

* 1 large Marmite normally = 5 lbs.

$1 = G 5

G 270.40
x 4 weeks

G 1081.6/month

or $ 216.32/mont

TABLE NO. 6 (a)

NUTRITIVE VALUE OF FOOD CONSUMED DAILY AT THE SANS-FIL CENTRE, AUGUST 1977

FOODS				NUTRIENTS AVAILABLE PER CHILD						
Preparation	Food	Total grs. uncooked*	Per child grs.**	Cal.	Prot. Grs.	Calc. Mg.	Iron Mg.	Vit. A Meg.	Riboflavine, Mg.	Vit. C Mg.
Porridge	CSM(corn-soya-milk)	2,500	50	173	9.5	251	5.7	98	0.30	-
	red sugar	1,425	28	100	0.1	14	1.2	-	0.03	-
	powdered milk	500	10	36	3.6	131	-	150	0.18	-
Citrus Beverage	lime/lemon	320	6	2	-	1	-	-	-	2
	grapefruit	600	12	4	0.1	2	0.1	-	-	5
	red sugar	800	16	57	0.1	8	0.7	-	0.02	-
Ground Corn with Bean Sauce	ground corn	3,325	66	240	5.2	4	0.7	17	0.03	-
	chives & garlic	25	-	-	-	-	-	-	-	-
	oil	850	17	150	-	-	-	-	-	-
	dried peas	1,750	18	62	4.0	14	1.0	0.1	0.03	-
Meat Sauce	tomatoes	125	2	-	-	-	-	-	-	-
	meat	1,100	22	25	4.7	4	0.9	-	0.04	-
Vege-tables in sauce	okra	300	6	2	0.1	5	-	2	-	2
	watercress	75	2	-	-	2	-	6	-	1
	green leaves	825	16	5	0.4	10	0.5	55	0.03	7
	carrots	500	10	4	0.1	3	0.1	94	-	1
	cabbage	400	8	2	0.1	3	-	1	-	3
Totals				862	28.0	452	10.9	423.1	0.66	21
Daily needs: Average for 1-5 year olds				1,450	29.0	450	10	262	0.80	20
% of Daily needs consumed.				59%	97%	100%	109%	161%	82%	105%

* These total grams of uncooked food represent all of the food purchased or otherwise provided for the center food; they include food not consumed by the children (this is computed in the next column) but used in other ways or for the moment "left over"

**40 plates were served.

TABLE NO. 6 (b)

NUTRITIVE VALUE OF FOOD CONSUMED DAILY AT PORTAIL LEOGANE, JULY 1977

FOODS				NUTRIENTS AVAILABLE PER CHILD						
Preparation	Food	Total gms uncooked*	Per child grms**	Cal.	Protein Gms	Calc. Mg.	Iron Mg.	Vit. A Mcg.	Riboflavine Mg.	Vit. Mg.
Porridge	refined yellow corn	1,362	54	195	5.2	7	1.8	11	0.06	-
	red sugar	350	14	50	-	7	0.8	-	0.02	-
AK-100	AK-100	3,000	90	339	12.7	34	3.9	19	0.12	1
	Lard	113	3	26	-	-	-	-	-	-
Meat and vegetables	liver	189	4	5	0.8	-	0.2	285	0.09	-
	lung	250	5	4	0.8	1	0.3	2	0.02	-
	cushaw (pumpkin)	100	2	1	-	-	-	6	-	1
	carrots	175	3.5	1	-	1	-	33	-	-
	cabbage	200	4	1	-	2	-	-	-	2
	chayote	275	5.5	2	0.2	3	0.1	10	0.01	1
	tomato paste	25	-	-	-	-	-	-	-	-
	spinach	175	3.5	1	0.1	2	0.1	12	-	2
	purslane	175	3.5	1	-	3	0.1	8	-	1
	lard	112	2.2	19	-	-	-	-	-	-
	chives	50	1.0	-	-	1	-	2	-	-
Citrus Beverage	lime/lemon	335	13	4	-	3	-	-	-	5
	red sugar	350	14	50	-	7	0.6	-	0.02	-
	syrup	75	3	9	-	2	0.7	-	-	-
Milk	powder milk	1,680	50	182	18	650	0.3	4	0.90	4
Totals				890	37.8	723	8.7	392	1.24	17
Daily needs: Average for 1-5 year olds.				1,450	29	450	10	262	0.80	20
% of Daily needs consumed.				61%	130%	161%	87%	150%	155%	85%

* These total grams of uncooked food represent all of the food purchased or otherwise provided for the center food; they include food not consumed by the children (this is computed in the next column) but used in other ways or for the moment "left over"

TABLE NO. 7

NUTRITIONAL STATUS OF CHILDREN IN AREAS WHERE DIETARY SURVEYS WERE MADE MARCH-AUGUST 1977

		LA MONTAGNE		ORANGERS		FOND DROIT
I.	Weight/Age	No.	%	No.	%	
	Normal 90% +	2	22	6	18	Not Recorded
	First (89-75%)	3	33	19	58	
	Second (74-60%)	4	44	6	18	
	Third (60%-)	0	0	2	6	
II	Height/Age					
	Normal (110-90%)	6	66	25	76	
	Moderate (89-80%)	3	33	8	24	
	Severe (80%-)	0	0	0	0	
III	Weight/Height					
	Normal (110-90%)	6	66	21	64	
	Moderate (89-80%)	2	22	10	30	
	Severe (80%-)	1	11	2	6	

HACHO CENTERS

	Cost Cat	COST PER CENTER K	COST PER CENTER R
I. Personnel			
A. Community Level			
1. Nutritionist (20) @ $60/mo	D		720
2. Asst. Cook (20) @ $60/mo 1./	D		576
3. Per diem @ $3.60/mo.	D		43
Subtotal			1339
B. Regional level			
1. Supervisors (2) @ $230/mo *2./	D		276
C. Central Level	A		1282
Total			2897
II. Commodities			
A. Equipment and Supplies	D	900	350
B. Drugs @ $25/month	D		300
C. Food - locally purchased @$50/mo.			600
D. Title II 3./	D		1620
Total		900	2870
III. Construction 4./	D	4000	
IV. Transport *5./			
A. Costs of Supervisory Transport	D		150
B. Transport of Commodities	D		
C. Moving Costs (to set up facility)	D	200	50
Total		200	200

V. Training 6./

	Cost Cat	COST PER CENTER K	COST PER CENTER R
A. Nutritionist per diem @ $5/day			
a. basic training (30 days)	D	150	
b. recyclage (5 days)	D		25
B. Travel expenses @ $10/session	D	10	10
C. Materials	D	3	
D. Instructor Honorarium *	D	1.50	-
TOTAL		164.50	35

COST CATEGORY	TOTAL COSTS PER CENTER CAPITAL	RECURRENT	TOTAL
D	5264	4720	9984
A	-	1282	1282
TOTAL	5264	6002	11,266

Notes: Estimates supplied by Tim Lavelle (HACHO Administrator)

* indicates cost or salary is prorated over 20 centers

1. Per diem is provided for transport etc. when provisions are being bought.

2. In country yearly budget for HACHO is roughly $513,000. Excluding the direct costs of running centers, an additional 5% is allotted for Admin/Support costs - approximately $25,600. This divided by 20 centers = $1282.

3. Estimated Market value of Title II food = $135/month (WSB and Oil)

4. Costs vary depending on the complexity of the structure to be built. Estimated range is anywhere from $2000-$10,000; $4000 has been arbitrarily selected for the purposes of this discussion.

5. Includes costs of fuel, depreciation and drivers which are estimated to be $250/month.

6. Training costs are the same as those for BON responsables as training is done under the auspices of the Bureau: HACHO nutritionists go through the same basic training program as a BON responsables. The responsables however, would attend a greater number of recyclage courses per year than the nutritionist.

	Cost Cat	COST PER CENTER K	COST PER CENTER R
I. Personnel			
1. Nutritionist (10) @ $60/mo	D		800
2. Supervisor *	D		90
TOTAL			890
II. Commodities			
1. Scales	D	35	
2. Cooking Equipment	D	100	
3. Medicines	D		150
4. Miscellaneous	D		50
5. Food 1. (Title II)	D	-	2220
TOTAL		135	2420
III. Transport	D		50
IV. Administrative Overhead *	A		110
TOTAL	D	135	3360
	A	-	110
GRAND TOTAL		135	3470
K&R		3605	
K&R-A		3495	

Notes: Estimates are provided by Perry Smith (Director of CWS/Haiti)

* Costs and/or salaries are prorated over 10 centers.

1. Food = 2 Kg CSM + 2 Kg WSB + 1/2 Kg oil = $1.85 per child per month X 100 children X 12 months. Costs are expressed at market value.

PROJECT INTEGRE

	Cost Categ.	COST PER ANNUM	
		K	R
I. CENTRE de Nutrition[1]			
A. Personnel			
1. Nutritionist @ $125/month	D		1500
2. Asst. @ $10 month	D		120
Subtotal			1620
B. Commodities[2]			
1. Food @ $238/month	D		1536
2. Donated food @ $104/month[3]	D		1248
3. Equipment	D	184	43
4. Utensils	D	274	137
Subtotal		458	2964
C. Miscellaneous Expenses	D		168
Grand Total	D	458	4752
Capital + Recurrent	D	5210	
II. FOYER de Demonstration[4]			
A. Personnel			
1. Nutritionist @ $125/month	D		1500
B. Commodities			
1. Food @ $40/session x 20 sessions	D		800
2. Donated food @ $18 session x 20[5]	D		360
3. Utensils[6]			40
C. Miscellaneous expenses @ $7/session	D		140
Grand Total	D		2840

NOTES:

1. Per annum costs are based on the following: 4 three month sessions at the centre and 20 sessions at the mobile foyer (the estimated average number held during 12 months by one nutritionist).

2. Capital costs for equipment and utensils are based on project experience in Grand Goave. Replacement (recurrent) costs for utensils are arbitrarily assumed to be 50% of the capital cost. Recurrent costs for equipment are based on the average of center costs at 3 locations (Grand Goave, Nan Bonhomme, Fauche). See Attachment E for cost data.

3. Derivation of cost of donated food to Centers and Foyers (at Market Value):

   a. Each child receives approximately 16 oz (2 cups) of "Kwash milk" per day.

   b. Cost: 1 cup of fortified powdered milk = .24
      1/2 cup of sugar = .05
      1/2 cup of oil = .08
      Yields roughly 4 cups of liquid = .37

   Therefore, 1 cup costs .09

   c. Monthly cost at center:

      (assuming 29 children per cycle)

      29 x .18 x 5 days = $26/week x 4 weeks = $104/month

   d. Cost per foyer session:

      (assuming 10 children per session)

      10 x .18 x 10 days = $18/session

4. Costs based on data extrapolated from Attachment E (data covers 21 sessions over a 12.5 month period).

5. See footnote 3.

6. Utensils are estimated to be roughly $1.54 (rounded to $2.00) per session, or $40.00 per year. Based on data provided in Attachment E.

DIVISION D'HYGIENE FAMILIALE

PROJET INTEGRE DE SANTE ET DE POPULATION

DEPENSES POUR LES CENTRES ET FOYERS DE NUTRITION: FEVRIER 1976 A NOVEMBRE 1976
(EXPENSES FOR CENTERS AND FOYERS OF NUTRITION)

LOCALITES	PROMOTION	SALAIRE	NOURRITURE	AMENAGEMENT	USTENSILES	DIVERS	TOTAL	MERES	ENF.
Grand-Goâve	1	$1104,00	$339,86	$184,21	$274,00	$ 4,80	$1906,87	21	30
	2	1067,00	364,76	—	—	13,57	1445,33	19	21
	3	445,00	403,85	—	—	9,12	857,97	20	31
	4	449,00	420,55	—	—	8,70	878,25	22	29
	5	435,00	400,50	26,9	0,10	14,55	877,05	16	27
	6	441,00	401,94	1,00	—	10,30	854,24	30	37
	7	530,50	485,91	—	—	4,7	1021,11	17	27
TOTAL		4471,5	2817,37	212,11	274,10	65,74	7840,82	145	202
Nan Bonhomme	1	$848,40	$385,03	$ 43,20	$239,4	$44,03	$1560,06	22	36
	2	502,00	367,24	—	—	9,96	879,20	23	31
	3	460,00	448,35	—	—	2,36	910,71	27	34
Diny	1	450,00	378,18	—	—	40,24	868,42	26	31
	2	447,00	321,73	—	2,10	16,94	787,77	25	33
Gérard	1	441,00	336,93	—	1,80	4,04	783,77	23	32
Fauché	1	462,00	343,71	60,35	0,38	1,7	868,14	23	30
	2	517,50	311,33	—	—	0,5	829,33	16	16
TOTAL		$4127,9	$2892,50	$103,55	$243.68	$119,77	$7487,40	183	224
TOTAL CENTRES		$599,4	5709,87	315,66	517,78	185,51	15328,22	328	426
FOYERS	1 à 49	3511,5	1776,6	—	75,8	—	5363,9	390	494

HOSPITAL REHABILITATION

I. Hôpital Albert Schweitzer

A. Estimated cost per malnourished pediatric patient per day is $12 (1976 prices). Inflated to 1978 prices, (at 20% per annum) cost is roughly $17/patient/day.

B. Estimated length of stay is 2 weeks in the intensive care ward:

14 days x $17 = $238

C. Thereafter, the child is transfered to "Ward III", where cost of treatment is roughly that of a center. Approximate daily costs per child in a Schweitzer Mothercraft center in 1975 was .40 per day, or .70/day inflated to 1978 prices.

D. Average length of stay in Ward III is 2 - 3 weeks. Cost of treatment is therefore $10 - $15 per child.

E. Total cost of rehabilitating one child is roughly $250.

II. Hôpital De l'Universite d'Etat d'Haiti

A. Cost of medicines, vitamins and food per malnourished pediatric patient per day is roughly $6 for the first week and $3 thereafter.

B. Including cost of staff salaries:

1.	Doctors	11	x $140/mo	x 12	=	18480
2.	Nurses: diplome	8	x 100/mo	x 12	=	9600
	Nurses: resident	10	x 50/mo	x 12	=	6000
3.	Aux nurses	10	x 50/mo	x 12	=	6000
4.	Resident doctors	36	x 65/mo	x 12	=	28080
						$68160

Assuming the 125 pediatric beds are fully occupied year round: $68,160 ÷ 365 days ÷ 125 beds = $1.50 per bed per day

C. Total cost of rehabilitation is:

$7.50 x 7 days = 52.50
$4.50 x 21 days = 94.50
$147.00 per child

Assuming an average length of stay of 4 weeks

ANNEX TWO

Population Served During One Year

by Facility & Strategy

Note: Haitian data typically refer to program participants as being "rehabilitated" (children) and "educated" (mothers). These terms are used here to describe program participants.

1. BON CERN

Maximum Capability of 1 CERN

35 children rehabilitated x 3 cycles = 105
35 mothers educated x 3 cycles = 105

Actual Number[1]

60 children rehabilitated per year
60 mothers educated per year

2. HACHO Center

Maximum Capability of 1 center:

35 Children rehabilitated x 3 cycles = 105
35 mothers educated x 3 cycles = 105

Actual Number[2]

60 children rehabilitated per year
60 Mothers educated per year

3. CWS Center[3]

Maximum Capability for 1 center
300 children per year rehabilitated
300 mothers per year educated

Actual Number (average)

250 children per year rehabilitated
200 mothers per year educated

4. Projet Intégré

A. Centre de Nutrition[4]

Maximum Capability for 1 center
30 children rehabilitated x 4 cycles = 120
30 mothers educated x 4 cycles = 120

Actual Number (average)
26 children x 4 cycles = 104
20 mothers x 4 cycles = 80

B. Foyer (based on Mountainous area experience)[5]

Maximum Capability for 1 session = 15 children and 10 mothers x 20 sessions = 300 children and 200 mothers.

Actual Number (average)
Roughly 10 children and 8 mothers x 20 sessions = 206 children and 170 mothers.

5. Hospital Rehabilitation[6]

A. Hôpital Albert Schweitzer

Actual Number

470 were admitted into pediatrics suffering from severe malnutrition. Of that number, roughly 24% died leaving 360 rehabilitated.

B. Hôpital de l'Universite' d'Etat d'Haiti[7]

(Approximate) Actual Number

125 bed capacity of which 20 are usually occupied by children with severe cases of malnutrition. Assuming an average length of stay of 4 weeks, roughly 300 children per year are admitted. Of that number, about 25% die leaving around 195 rehabilitated.

NOTES:

1. Based on data found in: Joyce M. King, "An Evaluation of BON-AID Centers for Education and Nutritional Rehabilitation, January 1979.

2. Assuming (for lack of data) that actual numbers served approximate those of the BON CERN.

3. CWS staff estimates.

4. Based on data (averaged) obtained from 16 promotions (cycles) held from Feb 1976 to Nov 1978.

5. Based on data extrapolated from 49 sessions held from Feb 1976 to Nov 1978.

6. Based on pediatric admission data collected over a 12 month period (Jan - Dec 1977) by the Hôpital Albert Schweitzer staff.

7. Interpolated from data provided by the Pediatric Medical Staff at the Hôpital de l'Université de l'Etat d'Haiti.

ANNEX THREE

Effectiveness and Mortality Indicators

1. BON CERN

   a. change in percent standard weight:
      - 71% maintained zero or better
      - 29% did not gain
   b. mortality rate in program: 1.3%

   Source: see J. King, op. cit., 1979

2. a. Mortality rate in program: 2.3%

   Source: DSPP, Bureau de Nutrition, Activities du Programme d' Amélioration de la nutrition pour les Periodes S'Etendant d'Octobre à Decembre 1977 et de Janvier à Mars 1978.

3. Project Intégré
   A. Centre de Nutrition
      1. Change in percent standard weight:
         -72% maintained zero or better
         -16.5% did not gain
      2. Mortality rate in program: 2.0%
      3. 1-4 mortality: 11.9
   B. Foyer de demonstration
      1. Change in percent standard weight
         -89% maintained zero or better
         -11% did not gain
      2. Mortality rate in program: 1.5%
      3. 1-4 mortality: 15.97.

      Source: See Attachment F

4. Hospital Rehabilitation

   A. Hôpital Albert Schweitzer
      mortality rate: 24%

      Source: Based on data collected during 4 months of 1977.

   B. Hôpital de l'Université de l'Etat d'Haiti
      Mortality rate: 25%.

      Source: Staff estimate

ATTACHMENT F

DEPARTEMENT DE LA SANTE PUBLIQUE ET DE LA POPULATION

DIVISION D'HYGIENE FAMILIALE

PROJET INTEGRE DE SANTE ET DE POPULATION

MAN. BONHOMME - CENTRE

REHABILITES

GROUPE	REHABILITES TOTAL	PARTIS	MORTS	0 +	%	0 -	%	TOTAL
E_1	30	2	1	18	66.7	9	33.3	27
E_3	24	1	1	14	63.6	8	36.4	22
E_5	24	1	0	19	82.6	4	17.4	23
E_7	31	5	0	24	92.3	2	7.7	26
E_{12}	24	1	0	23	100.0	0	0.0	23
E_{14}	30	1	0	25	86.2	4	13.8	29
	163	11	2	123		27		150

Attachment F (continued)

DEPARTMENT OF PUBLIC HEALTH AND POPULATION

FAMILY PLANNING DIVISION

JOINT INTERIM HEALTH AND POPULATION PROJECT

GRAND-BOAVE - CENTRE

REHABILITES

GROUPE	REHABILITES TOTAL	PARTIS	PERDUS	O +	%	O -	%	TOTAL
E_2	30	0	0	18	60.0	12	40.0	30
E_4	23	5	1	9	52.9	8	47.0	17
E_6	30	0	2	25	89.3	3	10.7	28
E_{11}	32	3	2	26	96.3	1	3.7	27
E_{13}	29	9	0	17	85.0	3	15.0	20
E_{15}	29	0	0	26	89.6	3	10.3	29
	173	17	5	121		30		151

ANNEX FOUR

Food Supplement Cost Data

Age (ans)	Besoins selon recommandation	TRAITEMENT AMBULATOIRE AVEC AK-1000 POUR: ENFANTS 1er DEGRE — Apport total et en pourcentage de 30gr.d'AK-1000 (2gr. cuillères)/jour		ENFANTS 2ème DEGRE — Apport total et en pourcentage de 90gr.d'AK-1000 (6gr. cuillères)/jour		ENFANTS 3ème DEGRE — Apport total et en pourcentage de 120g.d'AK-1000 (8gr. cuillères)/jour	
		TOTAL	%	TOTAL	%	TOTAL	%
<1an	proteines X 24 gr.	4.1 gr.	17%	12.3 gr.	51%	16.4 gr.	68%
	calories X 1000	106 cal	10%	318 cal	32%	414 cal	41%
1 - 4 ans	proteines X 30 gr.	4.1 gr.	14%	12.3 gr.	41%	16.4 gr.	55%
	calories X 1450	106 cal	7%	318 cal	22%	414 cal	28%
Coût du traitement par mois (en gourdes)*		2 livres d'AK-1000 par mois = 20des(US$0.40)		6 livres d'AK-1000 par mois = 60des(US$1.20)		8 livres d'AK-1000 par mois = 80des(US$1.60)	

Source: Dr. S. Donas, PAHO Advisor, Bureau of Nutrition, Port au Prince, Haiti.

* 1 livre d'AK-1000 = 1 gourde (US$0.20)

		TRAITEMENT AMBULATOIRE AVEC AK-1000 ET DE L'HUILE TOUR:					
		ENFANTS 1er DEGRE		ENFANTS 2ème DEGRE		ENFANTS 3ème DEGRE	
Age (ans)	Besoins selon recommandations	Apport total et en pourcentage de 30gr. d'AK-1000 et 10gr. d'huile par jour		Apport total et en pourcentage de 90gr. d'AK-1000 et 10gr. d'huile par jour.		Apport total et en pourcentage de 120gr. d'AK-1000 et 10gr. d'huile parjour	
		TOTAL	%	TOTAL	%	TOTAL	%
1 an	proteines $\bar{X}$ 24 gr.	4.1 gr.	17%	12.3 gr.	51%	16.4 gr.	68%
	calories $\bar{X}$ 1000	194	19%	406	41%	502	50%
1 - 4 ans	proteines $\bar{X}$ 30 gr.	4.1 gr.	14%	12.3 gr.	41%	16.4 gr.	55%
	calories $\bar{X}$ 1450	194	13%	405	28%	502	35%
Coût du traitement par mois * (en gourdes)		AK-1000 = 2 gourdes 300gr.huile 1.97 " Total 3.97 Gdes (US $ 0.40)		AK-1000 = 6 gourdes 300gr huile 1.97 " Total 7.97 Gdes (US $ 1.60)		AK-1000 = 8 gourdes 300gr. huile 1.97 " Total 9.97 (US $ 2.00)	

Source: Dr. S. Donas, PAHO Advisor, Bureau of Nutrition, Port au Prince, Haiti

* 1 livre d'AK-1000 = 1 gourde. 1 gallon d'huile = 25 gourdes.