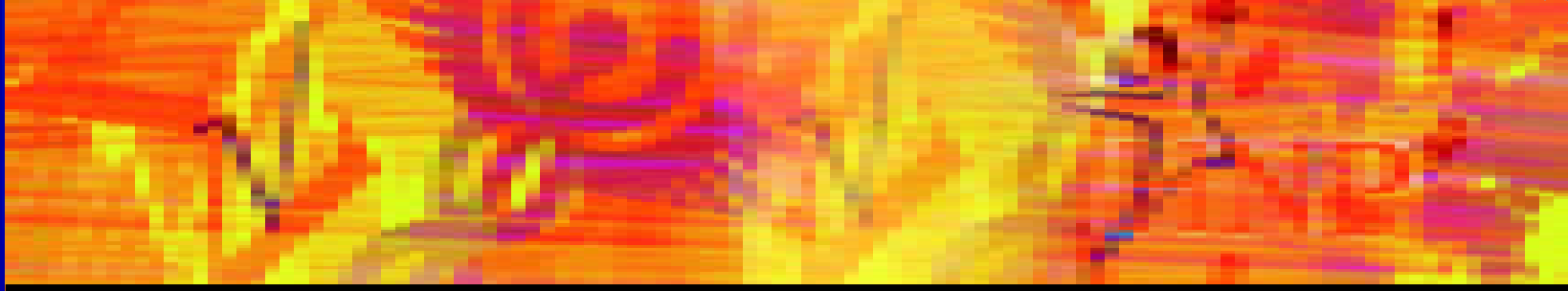

HNP DISCUSSION PAPER

A Cost Analysis of the Honduras Community-Based Integrated Child Care Program

(Atencion Integral a la Ninez-Comunitaria, AIN-C)

John L. Fiedler

May 2003

HNP
HEALTH, NUTRITION, AND POPULATION
THE WORLD BANK

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Health, Nutrition and Population (HNP) Discussion Paper

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Health, Nutrition and Population (HNP) Discussion Paper

A Cost Analysis of the Honduras Community-Based Integrated Child Care ProgramTitle *(Atención Integral a la Niñez-Comunitaria, AIN-C)*

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Paper prepared in response to requests from managers within international development agencies, for detailed information concerning the costs of implementing a community based nutrition project.
May 2003

Abstract: The Honduras AIN-C Program is a preventive health and nutrition program of the Honduras Ministry of Health that relies on volunteers to help mothers and communities pro-actively monitor and maintain the adequate growth of young children. A 2000 experimental-design based evaluation found that the program achieved near-universal coverage and was effective in improving mothers' child-rearing knowledge, attitudes and practices, including feeding practices and appropriate care-giving and care-seeking practices for children with diarrhea and acute respiratory illness. The program is widely regarded as a model. This study was undertaken to provide the first comprehensive estimates of the cost of AIN-C, with the goal of providing a program and financial planning tool for Honduras, as well as other countries interested in implementing an AIN-C Program.

Expressed in mid-2002 U.S. dollars, the study found:

(1) the long-term, annual, recurrent cost per child less than two participating in the program is US$6.82,
(2) the long-term, annual, incremental budget requirements per child less than two participating in the program is $4.00,
(3) the long-term, annual recurrent cost per capita is $0.44, and

the cost of an AIN-C monthly growth monitoring and counseling session per child is 11 percent of the cost of a traditional MOH, facility-based growth and development consultation per child. Summary in 300 words maximum.

Keywords: nutrition; community-based nutrition; cost analysis; financing; community participation.

Disclaimer: The findings, interpretations and conclusions expressed in the paper are entirely those of the authors, and do not represent the views of the World Bank, its Executive Directors, or the countries they represent.

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FOREWORD

Malnutrition plays a key role in over half of child deaths in developing countries. To achieve the Millennium Development Goals (MDGs) adopted at the UN Millennium Summit in 2000, we must address the challenge of reducing child malnutrition and improving child health, as an integral part of poverty reduction efforts. The Community-Based Integrated Child Care Program (AIN-C) implemented by the Ministry of Health in Honduras, has captured the attention of health and nutrition workers in many countries. AIN-C differs from many other nutrition programs. A Ministry of Health program covering more than half of the health areas in the country, it relies primarily on teams of volunteers supported by local clinic staff. The emphasis is on prevention, on identifying inadequate growth in infants and children less than two years of age and addressing the causes of poor growth. It includes a curative care component for children less than five years of age. Community volunteers assist families in learning how to improve child care, health, and development, and in addressing broader social concerns at the community level to meet the needs of children. Evidence from a rigorous interim evaluation in 2000 indicates that the program is sustainable and effective. An impact evaluation is currently underway, and should shed additional light on the health outcomes of implementing the AIN-C program.

This costing study of the AIN-C program has direct utility for the Honduran Ministry of Health (MOH), as well as for planners in others countries. Based on extensive interviews with AIN-C staff, as well as additional research, technical review, and in-depth discussions with program advisors, it provides a flexible tool to estimate the direct costs of the program, and to estimate the cost implications of adjustments to elements of the program design. As the Honduran MOH seeks to support and strengthen the program, and expand it to poorer populations in remaining health areas, the tool will enable the ministry to estimate the financing requirements of the existing program and the start up costs for the new areas.

Countries around the world are already adapting the AIN model in community-based programs to improve infant and child health and nutrition in Africa, Asia, and elsewhere in Latin America and the Caribbean. This study and costing methodology should serve as a valuable tool for planners considering whether such a program is feasible to implement in terms of costs, and whether, once introduced, it will be sustainable. The tool can be readily adapted and modified according to the needs of health planners. It provides a methodology to inform discussions of what it actually costs to prevent malnutrition, promote growth, and address common curative care needs for young children. As such, this work is an exciting contribution to the further development of community based health and nutrition programs.

We welcome readers' comments on the study and its application in other settings.

Alexander S. Preker
Chief Editor, HNP Publications
World Bank

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Thanks to Milla McLachlan, Nutrition Advisor and Task Manager, for guiding this work. Thanks to Victoria de Alvarado, Marcia Griffiths, Judy McGuire for providing input that was essential in designing the study, and to them and Margaret Saunders for reviewing and commenting on earlier drafts. Finally, but foremost, thanks to the many people who gave so freely of their time and knowledge in explaining the AIN-C Program which made this study possible: Victoria de Alvarado (the Honduras Country Team Leader of the USAID BASICS II Project), Laura Molina and the entire BASICS II/Honduras staff; Dr. Jacobo Arguello (Director of the Maternal-Child Health Division of the Ministry of Health of Honduras), Dr. Carlos Villalobos, Joel Durón, Meri Sinnitt and to the many Ministry of Health staff and AIN-C monitors who were interviewed as part of the study.

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Executive Summary

The Community-Based, Integrated Child Care Program (Atención Integral a la Niñez-Comunitaria, AIN-C) is a preventive health and nutrition program of the Ministry of Health of Honduras that relies primarily on volunteers to pro-actively engage both the families and the communities to monitor and to maintain the adequate growth of children under two years of age. AIN-C also treats and refers sick children under 5 to health services. For the under two's, the Program employs inadequate monthly growth as a triggering device for applying a diagnostic decision-tree analysis to identify the causes of inadequate weight gain, and combines it with formative research-based, protocols that address the causes of the problem, rather than simply treating its short term symptoms. AIN-C is an uncommon health program in that it concurrently works to improve daily child care practices in the home, while working to create healthier community and municipal policies and environments for children. The volunteers use a simple, uniform, highly structured but personally-relevant counseling approach with families, while helping their communities and municipalities analyze and act against the causes of poor child growth that are beyond a family's ability to improve.

The antecedents of the current AIN-C Program date from 1991, when the Ministry of Health (MOH) of Honduras began implementing an integrated child nutrition program in response to the country's persistently high rate of under-five malnutrition. Today, AIN-C is the national community, volunteer-based child health program focusing on child growth as a composite measure of child well-being. The critical, local-level, implementing unit of the Program consists of a team of about three community volunteers responsible for about 25 children. This team approach has been found to better maintain the volunteers' motivation, effectiveness and interest in the Program. The Program has been implemented in roughly 1,800 communities covering portions of 24 of Honduras' 42 health areas. Current Ministry plans call for implementing the program in the poorest municipalities throughout the country over the next several years.

The Honduras AIN-C Program is widely regarded as a model program. A 2000 experimental-design based evaluation found that the program was reaching 92 percent of children under two and was effective in improving mothers' child-rearing knowledge, attitudes and practices, including feeding practices and appropriate care-giving and care-seeking practices for children with diarrhea and acute respiratory illness. Although there is, as yet, no information about the impact of the program on health outcomes, such an evaluation is currently being conducted. The program is already being replicated in, or has inspired similar programs in several countries throughout the world. This study was undertaken to provide the first comprehensive estimates of the cost of introducing the program into a health area and the long term, annual recurrent cost of maintaining it in a health area. The purpose of the study was two-fold: (1) provide Honduran MOH officials with tools for planning and budgeting their AIN-C Program activities, as well as for investigating how changes in the structure of operations of the current program can be expected to change the cost and other characteristics of the program, and (2) to provide health officials in other countries guidance in establishing a similar program in their own countries. The cost spreadsheets were constructed in a manner so as to provide a tool that can be easily modified to fit the parameters of other health systems and used to estimate the cost of the AIN-C Program in another country.

The cost analysis applies an activity-based costing methodology and uses a bottom-up, "ingredients" approach which identifies all of the inputs used in implementing each of the activities of the AIN-C Program. This methodology is more comprehensive than the more commonly employed accounting- or budget-based approach, as it includes "off-budget" costs, as well as pro-rated portions of "shared inputs" (i.e., resources that are used to produce the AIN-C Program, as well as other goods and services). Still,

the cost analysis does not include all of the costs incurred by Honduran society in implementing the program. Some costs of the program—for instance, the costs incurred by community leaders and mothers participating in the program—are not included. In addition, the study includes only the ministry's direct costs. A determination was made in designing the study that the time that estimating indirect costs would require would be better spent developing more precise estimates of what were regarded as the pertinent costs for MOH decision-makers; viz., the direct costs of the program and its incremental budget requirements. The study relied upon a variety of principally secondary data sources, including key-informant interviews. Twelve major activities and 11 sub-activities of the AIN-C Program were defined. Algorithms specifying the numbers, types and costs of all of the inputs required to produce each of the activities and sub-activities were defined. The parameters characterizing a "typical" health area were defined, and a six-year phased-in implementation schedule was developed. Year-by-year accounts of the numbers, types and costs of the activities were developed for a seven-year period. Costs were estimated per activity, per child participant, per child-year-of-participation, per community, per health center, per health sector and per health area. Six sensitivity analyses were conducted to investigate the cost impacts of modifying key characteristics of the program.

The annual, total direct costs of the program were estimated for: (a) the six year phase-in of the Program in one health area, as well as for (b) the permanent, long-term (i.e., after the phase-in) period. The long-term, average recurrent cost per child less than two participating in the program is 113 lempiras (US$6.82, in mid-2002 values). This metric—the average cost per child participating in the program—is the cost measure preferred by AIN-C program personnel for program and financial planning purposes, and thus was chosen as the focus of this study. However, because it excludes children two to four years old in the community who may be beneficiaries of the program's curative care services, this measure overstates the cost of reaching only the under two population. The cost of reaching only the under two's is 13 percent less, and would cost 98 lempiras (US$5.91) per year per child participating in the program.

Some of the costs of the AIN-C Program were already being paid by the MOH before the Ministry began implementing AIN-C (primarily personnel, but also for some non-personnel, supervisory costs), and have continued to be paid since the implementation of AIN-C began, although the composition of these activities has changed. Subtracting these fixed costs from the total direct cost estimates of AIN-C yields the Program's annual, incremental budget requirements; i.e., the amount of additional financial resources that the Ministry of Finance must allocate to the MOH if the AIN-C Program is to be carried out. The long-term, annual average incremental budget requirements per child less than two participating in the program is 66 lempiras (US$4.00).

The ***preventive care*** component of the Program constitutes 78 percent of the total annual recurrent costs, and averages US$5.41 per child under two years of age who is participating in the Program. The annual, recurrent cost of adding the ***curative care*** component to the preventive program is US$1.41 per child under the age of two who is participating in the Program. Other key summary measures of the AIN-C Program's costs and financing requirements are presented in the table below.

AIN-C Program Direct Costs and Financing Requirements	US$ mid-2002
1. Long-term, annual, recurrent cost per child < 2 participating in the Program	$6.82
2. Long-term, annual, incremental budget requirements per child < 2 participating in the Program	$4.0
3. Long-term, annual recurrent cost per capita	$0.44
4. Cost of an AIN-C monthly growth monitoring and counseling session per child as a percent of the cost of a traditional MOH, facility-based growth and development consultation per child	11%

The AIN-C Program is an inexpensive and effective program. Moreover, the low cost of the Program, the low turnover in the key personnel of the Program—the community volunteers—and Honduran communities' continued enthusiastic participation in the Program, portend well for its sustainability. The AIN-C Program is a good buy for the Ministry of Health and the people of Honduras.

I. INTRODUCTION

The Community-Based, Integrated Child Care Program (Atención Integral a la Niñez-Comunitaria, AIN-C) is a preventive health and nutrition program that relies primarily on volunteers to pro-actively engage both the families and the communities of children under two to monitor and to maintain the adequate growth of young children and treat and refer on demand children under 5 who are ill.

The antecedents of the current AIN-C Program date from 1991, when the Ministry of Health (MOH) of Honduras began placing more emphasis on young child nutrition in response to the country's persistently high rate of under-five malnutrition. The new approach focused on child growth as a composite measure of child well-being, and modified the Ministry's traditional approach of the growth monitoring program by making it more pro-active. The new approach used inadequate monthly weight gain (rather than nutritional status) as a triggering device for applying a diagnostic decision-tree analysis to identify the causes of inadequate weight gain. This analysis process is designed to identify both immediate and longer term (underlying) causes of inadequate weight gain, and suggests specific actions intended to ameliorate each contributory factor. MOH officials soon came to realize that the impact of this new approach was constrained by the limited coverage of the Ministry health services. The inadequate coverage of the MOH infrastructure meant that some children with inadequate growth never arrived at Ministry facilities for care, while others arrived too late or too infrequently to do much about it. Accordingly, on a pilot-test basis, health officials transferred key aspects of operating the program to the community. In order to facilitate the scaling-up of the program, it was deemed necessary standardize treatment and training protocols, and to provide clear, explicit and structured guidance on decision-making--particularly, counseling--tailored to specific situations.

Starting in 1995, the MOH worked with the USAID Basic Support for Institutionalizing Child Survival/BASICS Project to document and standardize the community-based AIN-C Program. After reviewing lessons and key best practices in growth promotion (Griffiths, Dickin and Favin, 1996) from other countries, the Honduran program was further refined, and launched in late 1996. Among the innovations were:

(1) a mechanism for involving the community in the program by creating a team approach to improving community health. (Instead of leadership resting on one community person, a small group of volunteers is chosen by the community and this group helps the community as a whole analyze child growth and create a healthier physical environment for young children to live and grow in.)

(2) the supplanting of the traditional growth indicator of ***any*** weight gain with the use of ***adequate*** weight gain, and, thereby, establishing a means for more closely monitoring the dynamics of child health, enabling the identification of problems early-on, in order to take preventive actions rather than waiting until a major health problem developed.

(3) a well developed set of tools to aid workers in developing an action plan for each child based on the child's growth that includes counseling, home visits, and referral.

(4) a simple, highly-structured and well-documented, job-based training program for community volunteers, predicated on the premise that the community volunteer is the heart and soul of the program (BASICS 1999, page 6).

In 1997, the AIN-C program package was introduced in 9 of Honduras' 42 health areas where roughly one-third of the national population lives. From 1998 to 2000, expansion was rapid. By the end of 2000,

the program covered almost half of Honduras' health areas. The early, evident success seen in project monitoring led to its being adopted in 2000 as an official, national MOH program. In the fall of 1999, after several years of heated debate, the program was modified to incorporate a limited "curative" care component that focuses on diarrhea, acute respiratory illness and detecting danger signs of children under five urgently needing referrals.

Current Ministry plans call for implementing the program in the poorest municipalities throughout the country over the next several years.[1] At present, the program operates in roughly 1,800 communities covering portions of 24 of Honduras' 42 health areas, and a growing number of non-government organizations (NGOs)—now numbering 8—have adopted and are implementing the program.[2] Some of the NGOs have worked directly with the MOH, while others have worked on their own. To date, all of the agencies implementing AIN-C have adopted the same set of standardized materials developed by the MOH with technical assistance of the BASICS Project, and most have been trained in AIN-C methods by the MOH and/or BASICS staff. The NGO versions of the program are very similar to the MOH's. The most notable differences have been that the NGOs, who have their own supervisors, have augmented the amount of supervision, and some NGOs have fewer than the standard three monitors working together per community. The smaller average number of monitors per community appears to be primarily attributable to the smaller, more dispersed, rural populations with which the NGOs work, although in the case of some NGOs it also reflects the NGOs' belief that promoters should be paid and their practice of doing so, together with affordability and sustainability considerations.

In 2000-2001, BASICS II conducted a mid-term evaluation of the AIN-C Program. It found that:

> the AIN community-based program is succeeding in its objective of promoting the growth of children under two years of age by integrating nutrition activities designed to improve feeding practices and nutritional status with prevention of illness through vaccinations and with appropriate care-giving and care-seeking practices for children with diarrhea and acute respiratory illness, (BASICS II, 2002, page 4).

More specifically, the evaluation found that AIN-C child-caretakers were increasingly more likely to know that a child who does not eat well, does not grow well, and were statistically significantly more likely:

- to have had more frequent contact with a health worker in the past 3 months,
- to have a child growth card for their children and to know how to interpret it ,
- to have fully immunized their children,
- to have exclusively breastfed their children less than six months of age,
- to have not used a baby bottle
- to have offered food at an optimal frequency to children 12 months and older
- to have received iron supplementation for their children four months of age or older,
- to know the danger signs of dehydration and acute respiratory infections,
- to know how to stimulate a child's appetite to ensure that he/she eats well,
- to have used oral rehydration therapy, and
- to have both offered their children fluids and continued feeding them during a bout of diarrhea, (BASICS II, 2002, pp. 3-5).

[1] The current administration is discussing limiting the coverage of the program to the poorest communities—so-called strata 4 and 5 communities (which will be defined below).
[2] In none of the 24 health areas in which the program currently functions is there complete coverage.

The Honduras AIN-C Program is widely regarded as a model program. It is already being replicated or has inspired similar programs in El Salvador, Guatemala, Nicaragua, Senegal, Uganda, Ghana, Eritrea and Zambia. Given the widely accepted view that the program is highly effective, an important, unanswered question has been: How much does the AIN-C Program cost? To date, there have been only some partial estimates of the cost of some components of the program. This study is designed to address this important information void.

This cost study is intended to serve two purposes:

- To provide Honduran MOH officials and NGOs implementing the AIN-C Program with tools for planning and budgeting their AIN-C Program activities, as well as for investigating how changes in the structure of operations of the current program can be expected to change the cost and other characteristics of the program.

- To provide health officials in other countries with a tool with which to explore how the AIN-C Program might be replicated in their own country, and how modifications in the structure or operations of the program might be expected to affect the program's cost.

The focus of this study will be on estimating:

1. the annual recurrent costs of operating the program in a health area[3], and

2. the costs of expanding the program to an additional health area.

[3] The Ministry of Health of Honduras is structured into health nine regions which are further divided into health areas. There are 42 health areas in the country.

II. METHODOLOGY

A. THE GENERAL APPROACH

The MOH does not have a cost accounting system that is capable of quantifying all of the types and quantities of resources that are used in the AIN-C Program. In part, this is because a large proportion of the resources that are required to provide the program are not paid for by the Ministry, but instead are funded by international and bilateral agencies (Spain, Germany, and, in particular, USAID). The quantities and costs of these resources, therefore are not contained in any MOH budget or expenditure report, and constitute what are referred to as "off-budget" expenditures. While these "off-budget" items do not presently constitute a direct cost to the Ministry, they do constitute a real cost of running the AIN-C Program—they are resources that are required to operate the program and, therefore, must be identified and quantified in a cost analysis of the Program. Moreover, eventually the assistance that AIN-C receives can be expected to falter or disappear altogether. Hence, the inclusion of these costs is warranted by sustainability considerations: the value of these inputs needs to be quantified and the Ministry needs to be cognizant of them and the magnitude of their costs.

Another consideration is that other countries considering introducing an AIN-C Program might not have external agencies defraying these costs. Excluding these resources from the analysis here, would under-estimate the Program's total costs, and could result in such countries under-funding the Program. Therefore the approach that will be taken in this analysis will be to identify and quantify all of the resources used to produce the AIN-C Program, regardless of who pays for them.

While it would be possible to combine data from the MOH budget with that of international agencies contributing support to the AIN-C, it would be difficult to do so because each agency's accounting system is to some extent idiosyncratic, and thus they are not directly comparable with another. Moreover, this "solution" would still be problematic for other reasons.

First, there would still be a number of resource costs that are indispensable to the AIN-C Program, but that are not contained in any budget or expenditure report. For example, the time that the AIN-C Monitors—the linchpin of the Program—devote to their AIN-C activities. One might be tempted to note that the Monitors are volunteers, and thus are not paid a salary, and therefore need not be included in the calculations. This, however, would be inadvisable, as the time input of the Monitors is simply too important an input into this program, not to take it into account. The Monitors obviously do constitute a resource that is required to produce the Program, and thus the value of their contribution must be accounted for. This may be done by estimating the opportunity cost of the time they contribute to the program—valuating it, for instance, as being equal to the minimum salary—or, alternatively, simply quantifying the amount of time they contribute. While this information may not be regarded at the present time by Hondurans as important or policy-relevant, it would be useful if, for example, it is found at some time in the future that adequate numbers of Monitors cannot be retained and it proves necessary to pay them in order to maintain the viability of the Program. Also, given the high level of interest other countries have shown in replicating this Program, the time input of the Monitors is information that is of fundamental importance to these countries in conducting a feasibility analysis of, or plan for, introducing AIN-C in their own country.

A second reason why it would be difficult to use only the accounting ledgers of the MOH and other international agencies participating in the financing of this program is that a large proportion of the resources that the MOH in particular provides to the AIN-C Program are what are referred to as "shared

resources;" i.e., they are used to produce a number of programs and activities in addition to the AIN-C Program. The costs of only a portion of such resources should be included in estimating the cost of the AIN-C Program.

These shortcomings and complications of an accounting system-based approach to estimating the costs of the Program have prompted adopting in this study what is referred to as an "ingredients" approach. Implementing an ingredients approach requires first identifying all of the outputs or activities of the AIN-C Program, and then identifying, quantifying and costing all of the inputs required to produce each of those activities. The ingredients approach is a "bottom-up" methodology, in contrast to the accounting-based approach, which is essentially a "top-down" methodology.

B. Determining What to Cost

Not to belabor the obvious, the first step in undertaking a cost analysis is to identify what is to be costed and how the analysis should be structured. The simplest approach that could be employed in this study would be to identify all of the resources that are used in implementing the AIN-C program and to determine their costs. The analysis would provide a lump-sum cost of the entire program, as well as the total amount spent on each type of input (or, in accounting nomenclature, each "object of expenditure"). While this approach would provide cost estimates, the estimates would not be as useful as they might otherwise be. In order to provide cost estimates that will be as managerially-, policy- and programmatically-relevant as possible, it was decided that the cost analysis should adopt an activity-based approach. Particularly in a program that is still evolving, and is already having to modify its structure in response to cost constraints, activity-based costing (ABC) provides a potentially much more powerful approach to cost analysis. As its name suggests, ABC estimates the costs of an organization's activities so that they can be analyzed independently, and, if deemed appropriate or necessary—for whatever reason—how they might be modified can be investigated in a relatively straightforward manner.

To apply ABC, it is necessary to identify specific activities that are to be costed. These are referred to as "cost centers." Cost centers are a particular way in which the resources used to produce an organization's activities—and the costs of those resources—are grouped. Cost centers must be defined in such a way that:

- the sum of the cost centers is comprehensive—thereby including all of the resources used to produce each and every activity of the Program—and together, the entire Program, and
- they must be mutually exclusive—thereby avoiding double counting any of the resources used to produce the Program.

It is important to note that the cost methodology is not comprehensive. It does not include all of the costs incurred by Honduran society in implementing the program. Rather, it focuses exclusively on the ministry of health's costs. Hence, some costs of the program—for instance, the costs incurred by community leaders and mothers participating in the program—are not included. In addition, the study includes only the ministry's direct costs. A determination was made in designing the study that the time that estimating indirect costs would require would be better spent developing more precise estimates of what were regarded as the more important costs for policy-makers, the direct costs and the incremental budget requirements of the program.

C. IDENTIFYING THE AIN-C PROGRAM'S COST CENTERS

This study identified 12 distinct activities that together constitute the AIN-C Program, and that will serve as the cost centers of this study. The 12 activities are presented in Table 1. AIN-C's standardized approach allows one to construct a number of costing algorithms as a means of operationalizing the ingredients approach.[4] As a result, the estimated total cost of the AIN-C Program is developed from the sum of its 12 activities. By virtue of having constructed algorithms to develop the cost estimates, it is relatively easy to substitute alternative values for some of the parameters (such as other salary scales, per diem rates or lengths of training sessions) in order to investigate the impact of changes in these values within the Honduras context, or to develop cost estimates for another country.

Given the objective of this study, the approach that has been taken in applying this methodology has been to regard as less important the development of estimates of the actual, historical costs of implementing the Program in a particular geographical region or during a particular time period, as opposed to trying to capture what is thought to be the "most likely" cost scenario, on average.

In identifying this "most likely" cost scenario, an effort has been made to supplement the analysis with a discussion about factors that influence the level of costs (e.g., the number of trainees per training, or the frequency of supervision) so as to provide a type of sensitivity analysis of the robustness of the estimates. To the extent possible, the impact of these cost-conditioning factors were investigated and the cost-estimate bracketed between high and low levels, depending upon the specific nature of the cost-conditioning factors that were investigated. This bracketing was achieved primarily by conducting simulations. It is hoped that this type of approach will prove useful to Hondurans (and other countries interested in the AIN-C Program) to investigate the cost implications of different ways in which the program might be reconfigured.[5]

[4] The MOH uses algorithms to estimate the quantities of materials and supplies required for its different types of training sessions. These were adopted, in a general sense, in this analysis, but were subject to modification so as to ensure that they were consistent with other program parameters obtained from other sources of data, such as, for example, the number of participants, the number of trainers or the duration of trainings. In general, it was found that the MOH algorithms needed to be revised, primarily because the approach was designed for a different purpose. The MOH training algorithms are used to identify all of the materials required for each training session and include some items that have already been purchased and can be used again (by the trainers). As such, reliance on these algorithms would double count the materials that the facilitator trainees receive when they are trainees, but subsequently use in conducting their own trainings. This prompted revising the MOH algorithms to exclude the materials that the facilitators use in their community level trainings. In addition, recognition of the durable nature of some of the training items prompted disaggregating training inputs into two input categories; durable items (those with a lifespan of more than a year) are classified as "equipment" and recurrent cost items as classified as "materials and supplies."

[5] Consideration was given to using an interview survey to identify prototypes of different ways in which the program is implemented (at the community, health sector and/or health area level) and to cost out each of these prototypes. Each local program would then have been classified as being one of the prototypes, and the total cost of the AIN-C would then be estimated as a weighted average of the prototypes. Time and resource constraints precluded employing this approach.

Table 1
Activity-Based Cost Centers of the AIN-C Program

1	Training of MOH Facilitators in the preventive component of AIN-C
2	Community base-line study. (Includes training of health center personnel, the initial meeting with the community, selection of the monitors, undertaking the study, data analysis and presentation of the results to the community.)
3	Training of health center and community level personnel in the preventive component of AIN-C
4	Training of MOH Facilitators in the curative component of AIN-C
5	Training of health center and community level personnel in the curative component of AIN-C
6	Monthly AIN-C community meetings (including weighing of children) a. With supervision by the health center nurse auxiliary and health sector nurse* b. With supervision by the health center nurse auxiliary (alone)* c. Without any supervision (the AIN-C monitor, alone)
7	Supervisory visits by health area staff: a. Visits to the health sector (directly and alone)[6] b. Visits to the health center via the health sector (accompanied by the sector nurse) c. Visits to the health center (directly and alone)
8	Supervisory visits to the health center by the sector nurse (independent of activity #8b; i.e., the visit in which the sector nurse is accompanied by health area staff)
9	Monthly meetings in the health center with other volunteers (including the re-supply of AIN-C monitors)
10	Meetings with the community (once every four months) a. The first AIN-C meeting with the community after initiation of the program b. The second AIN-C meeting after initiation of the program c. All such meetings subsequent to the second
11	Other monthly activities of the AIN-C monitors (home visits and curative care treatment)
12	Incentives provided to the AIN-C monitors a. The first year of the program b. The second and subsequent years of the program

*When the health center nurse auxiliary is in the community supporting the monitor she almost always also delivers some services that would not be provided by the monitors, most importantly, immunizations.

D. DATA SOURCES

A variety of data sources were used in this study. The sources for the different types of information included:

- **For information about the general characteristics of the structure, organization and functioning of the MOH system and services delivery statistics:** the Statistics Department of the MOH, MOH regional offices, health areas, health sectors and individual health centers.

- **For budgetary and cost information**: USAID/Honduras, the USAID BASICS/Honduras Project, the MOH/Child Health Directorate, the Finance Division of the Planning and Evaluation of Management Unit/Planning Department/MOH, as well as a sample of offices and facilities at different levels of the MOH.

[6] The health sector office is housed in a health center (usually a CESAMO, centro de salud con médico y otros, health center with a physician and others) that serves the dual purpose of directly providing care and housing health sector staff who are responsible for administrative and supervisory oversight functions.

- **For personnel costs**: the MOH Personnel Department monthly salary data were used to calculate an average daily rate. The current (June 2002) average hourly salary of all persons in the particular position of interest was calculated as follows: the monthly salary was annualized by multiplying it by 15 (the number of monthly salaries paid per year) and divided by the product of the average number of working days per year and the number of hours of work per day (i.e., divided by [240 days/year x 8 hours/day]).

- **For transportation costs:** Estimates were based on distance data from the MOH and cost data the Ministry of Public Works, Transportation and Housing. A modified version of the latter's base cost estimates was adopted and updated to mid-2002. Assuming the mix of paved and dirt roads was 20 percent-80 percent, the average total transportation cost per kilometer was estimated to be 3.253 lempiras (US$0.1963).

- **For data on AIN-C training sessions:** including their number, types, sites, as well as the number and type of trainers and attendees, and the number and types of materials required for each training were obtained from the Child Health Directorate, BASICS/Honduras, through interviews with MOH officials at various levels of the Ministry and from the AIN-C Monitors.

- **For information on general characteristics of the AIN-C program:** including site locations, number and types of staff involved and their respective responsibilities, follow-up and supervisory systems and, more generally the structure and costs of the program were obtained from various documents produced by the Department of Maternal-Child Health/MOH and the USAID BASICS Project and from interviews with the staff of these two organizations. Persons who were interviewed included:

    - Dr. Jacobo Arguello, Director, Maternal-Child Health Directorate, Ministry of Health (MOH),
    - Victoria Vivas de Alvarado, Country Team Leader, BASICS/Honduras, and BASICS field supervisor, Laura Molina
    - Dr. Carlos Villalobos, former Director of the Department of Maternal-Child Health/MOH and a former AIN-C trainer,
    - Mr. Joel Durón, Director of the Global Village (Aldea Global) AIN-C Program, and a Global Village field supervisor,
    - Meri Sinnitt, Chief of the Office of Health, Population and Nutrition, USAID/Honduras,
    - various MOH personnel, including a regional office director and his staff, the staff of two health areas, health sector nurse supervisors and the staff of health centers participating in AIN-C and
    - 15 AIN-C monitors.

Due to the decentralized nature of the AIN-C Program, the way in which the program allows for local variation, the way in which the program varies by size of population, terrain and other factors, and the way in which its information system is structured, field visits were an important source of information for corroborating and/or modifying what are commonly understood to be the general standards or official MOH norms governing some of the activities involved in the AIN-C Program.

Before proceeding to a description of the entire program and each of the 12 activity-based cost centers identified in Table 1, the discussion turns first to a description of the activities of the linchpin of the

program, the monitor, as a means of providing an overview of the program as it functions in the community.

III. A DESCRIPTION AND COST ANALYSIS OF THE ACTIVITIES OF THE AIN-C PROGRAM

A. A LOOK AT THE PROGRAM FROM THE MONITOR'S PERSPECTIVE: ESTIMATING THE AVERAGE AMOUNT OF TIME A MONITOR DEVOTES EACH MONTH TO AIN-C

Most of the monitors in the AIN-C Program of Honduras are women 25 to 40 years of age. Most have their own children, and many were volunteer community health workers before being asked by leaders of their communities to volunteer to be a monitor in the AIN-C Program.

AIN-C standards call for the program to (ideally) have an average of three monitors for every 25 children in a community. The typical program structure is organized around a community that usually has a single monthly weighing session in which roughly 25 under-two-year old children participate. While this is the most common scenario, there is considerable variation in these parameters: some communities—especially larger ones—have more than a single team of three monitors, a few communities have less than three monitors, some communities have less than 25 children and a few have as many as 35 children. A community is defined by its political boundaries, although a large community may be divided by sectors to have a manageable number of children. Experience has demonstrated that monitors are better motivated, more effective and more likely to retain interest in the program when they work in groups (Heaver 1988). In addition, as will be further discussed below, the program's principal activity of conducting monthly child weighing and growth counseling sessions consists of three distinct activities (weighing, recording and counseling), making three monitors ideal in terms of conducting these sessions in an efficient and effective manner.

Table 2 shows the average number of monitors per community currently working in AIN-C communities of Honduras. The standard of three monitors per community is adhered to in 85 percent of the 863 communities for which such data was available at the time of the study. In some smaller, more isolated, rural communities—such as those in which the Program operates in Region 6 and those in which Global Village works—there may be only two, and on rare occasion, only one monitor. Also, as already noted, in larger, more urban communities, where there may be substantially more than 25 children under the age of two, the community is usually divided into urban sectors, each comprised of a group of roughly 25 children. Given the close coincidence in the number of children per weighing session and the number of children per community, for ease of exposition, hereafter in this study the typical group of three monitors and their roughly 25 children under the age of two will be referred to as a "community."

Although one would hypothesize that the amount of time a monitor devotes to the AIN-C Program is likely to depend on:

- the number of children enrolled in the program,
- the number of children under the age of five in the community (this is the target group for the curative care treatment component) and
- the number of monitors in the community,

Table 2
Average Number of Communities and Monitors by Region and Area

Region / Area	*Number of Monitors per Community* 1	2	3	4	5+	Total Number Number of Communities	Total Number of Monitors	Average Number of Monitors per Community
Global Village: Sigua-	35	47	15	3	2	102	198	1.9
tepeque +Comayagua	34%	46%	15%	3%	2%			
Region 1, Area 3	0	2	4	16	16	38	164	4.3
	0%	5%	11%	42%	42%			
Region 1, Area 2						29	109	3.8
Region 2								
Comayagua						57	183	3.2
Siguatepeque						37	120	3.2
La Esperanza						12	36	3.0
La Paz						45	152	3.4
Marcala						43	130	3.0
Region 3								
Metro 1						50	149	3.0
Area 1						14	60	4.3
Cortes						36	133	3.7
Santa Cruz						62	199	3.2
Region 4								
San Lorenzo								
Choluteca						99	115	1.2
Conc. de Maria						9	30	3.3
Region 5								
Tocoa								
Area 3								
Gracias Lempira								
Erandique						10	32	3.2
San Andres								
Sta Rosa de Copan						1	10	10.0
Region 6								
Area 1						52	65	1.3
Area 2						38	36	0.9
Area 3						39	83	2.1
Area 6						10	16	1.6
Region 7								
Area 1						30	113	3.8
Area 2						32	97	3.0
Area 3						18	45	2.5
						863	2,275	
							Average of Averages:	3.2
							Weighted Average:	2.6
Weighted Average, Exclusive of Global Village and Region 6 (84% of all communities):								3.1

Notes: Areas identified above but with no information have had at least one AIN-C workshop, but have not yet identified Monitors (or started to provide AIN-C services). There have been no AIN-C activities to date in Region 8.

according to monitors and other program personnel interviewed in the course of this study, the average amount of time monitors spend on AIN-C activities does not vary much from one community to another. As already discussed, in most AIN-C communities, there are three monitors. While data about the number of children enrolled in the local AIN-C Program is maintained at the local (community and health center) level, this data is not maintained at the area, regional or national levels—in part because these numbers are in a near constant state of flux, changing on a month-by-month basis as children enter and exit the program.[7]

The amount of time that monitors spend conducting a monthly weighing and counseling session generally lasts about 3.5 hours, and is not closely related to the number of children in the program. A particular community's monthly session is always held on the same day of the week at the same time of day. While each community decides when to schedule its monthly session, in order to allow the nurse auxiliary of the local health center to more easily visit the monthly sessions of each of the communities in her domain, the days and times of the monthly sessions of the communities associated with a given health center are usually staggered. Most commonly the sessions are held from 8 to 11:30 am, but some communities have afternoon sessions. Monitors usually arrive a half-hour prior to the start of the session in order to get the weighing scale, table, chairs and other materials set up and to get organized. In addition, they generally spend about a half-hour after the session to complete the filling out of program forms and documents, to establish a follow-up schedule for home visits to those children whose growth was inadequate or who did not attend the session, and, to more generally discuss the results of the session. The total session time of 4.5 hours per monitor per month is about one-third of the total time that a monitor devotes to her/his AIN-C activities in the typical month.

The other component of the Program on which monitors spend a substantial amount of time each month is conducting home visits. Home visits are undertaken for several reasons: (1) they are done as follow-up to the monthly weighing and counseling sessions, (2) to selectively follow-up on children who have sought curative care from them, (3) they visit mothers with breastfeeding problems, (4) children who are less than six months old who are not being breastfed and (5) they visit newborns and their mothers to encourage them to enroll in the Program. There are no program data available at other than the local level about the magnitude of these operations, and frequently this information is not available even at that level. Thus, it was necessary to devise a means by which to estimate the amount of time devoted to these activities. The household survey data from the BASICS II mid-term evaluation proved to be a useful starting point.

According to the mid-term evaluation, 92 percent of all children under the age of two in a community are enrolled in AIN-C, and in the 3-month period prior to the survey, 70 percent of all children under two (not only those who were enrolled) had full (100 percent) participation in the program (i.e., they attended all three of the monthly sessions). It may be inferred that, on average, 10 percent of all of the children in a community miss the typical monthly weighing and counseling session. In a community in which there are 25 under-two children, 23 of them will be enrolled in the AIN-C Program. Assuming that 10 percent of all children in a community do not participate in the program in a given month, the typical community

[7] In the initial estimates of the costs of AIN-C, it will be assumed that the number of children per community is 25. This is the AIN-C norm for a team of three monitors, and identifies the recommended number of children that should be managed by such a team. From interviews and an *ad hoc* review of a limited number of local Program documents, it appears that the average number is somewhat less, averaging perhaps 18. Later in this report, in the sensitivity analyses section, the impact of the size of the program (in terms of number of children) on costs is investigated.

has two or three under two children who need to be followed-up on with a home visit each month for non-attendance.

According to the mid-term evaluation survey data, roughly six (24 percent) of the enrolled children are visited monthly due to inadequate growth. This proportion can be expected to vary by the phase of the program: it will be greater in newer programs and fall over time, as AIN-C changes child-feeding and other childcare norms in the community.

In addition to non-attendance and inadequate growth, there are, on average, three additional home visits per community per month for all other reasons, which include:

- following-up on sick children,
- visiting mothers with breastfeeding problems,
- visiting children less than six months old who are not being breastfed and
- visiting the homes of newborns.

Thus there are a total of about 12 home visits per community per month. At an average of one hour per visit (including walking to and fro) for all home visits, except the inadequate growers—which require 1.5 hours, on average—the typical community requires about 15 hours of home visits per month, or 5 hours per monitor per month.

Another activity that the monitors regularly undertake is the provision of curative care advice on demand for children under five in the community. The mid-term evaluation survey found that 31.9 percent of children under two had a bout of diarrhea in the two-week recall period. It also found that 14.3 percent of children under two who had diarrhea reportedly sought curative advice from an AIN-C monitor. Assuming these results are externally valid and equally applicable to children under five, it is estimated that in the "typical community" AIN-C monitors provide assistance to six children under five with diarrhea each month.[8]

The mid-term evaluation also found that one-fifth of children under two who were surveyed had an acute respiratory infection (ARI) episode during the two-week period prior to being interviewed. 8.4 percent of those who had an ARI episode were reported to have sought care or advice from a monitor. Assuming these results are externally valid and equally applicable to children under five, it may be inferred that in a month in an average community, two children under five seek care for an ARI problem from a monitor.[9] It is not known from the survey if children with other ailments also visited a monitor for care or advice, but these two conditions are far and away the most common and likely account for an overwhelming share of the total. If it is assumed that monitors see one additional child per month for all other reasons,

[8] The calculation is as follows: 25 under two children in the community * 2.5 to estimate the number of under five children in the community * 0.319 proportion of under five children with diarrhea in the past two weeks *.143 proportion of under five children with diarrhea in the past two weeks who were brought to a monitor * 2 (to extrapolate the bi-weekly measure to a monthly measure) = 5.70 diarrhea-related visits per month. (Prevalence and care-seeking data are from BASICS II, 2002, pages 57 and 59.)

[9] The calculation is as follows: 25 under two children in the community * 2.5 to estimate the number of under five children in the community * 0.235 proportion of children with ARI in the past two weeks * .084 proportion of children with ARI in the past two weeks brought to a monitor * 2 (to extrapolate the bi-weekly measure to a monthly measure) = 2.47 ARI-related visits per month. (Prevalence and care-seeking data are from BASICS II, 2002, pages 67 and 69.)

then the total number of curative care encounters that monitors will see (as a group) in their community each month will be about 9. Based on interviews with monitors it is estimated that each such encounter requires about one-half hour.[10] Thus the total amount of time spent providing curative care in a community would be about 4.5 hours a month, or 1.5 hours per monitor per month.[11]

Another activity that monitors are regularly involved in is meetings with the community once every four months. These meetings are held in a public building (a school, church or a community center), and generally last about 1.5 hours. Hence, a monitor spends an average of about 0.4 hours per month in such meetings. The fifth and final activity that AIN-C monitors regularly participate in are monthly meetings at the health center with all other community volunteers. These meetings are generally held on a week-day afternoons and last roughly 3.5 hours.

Table 3 provides a summary of the activities and the average amount of time that a monitor on average spends each month carrying out her/his AIN-C-related activities. These activities require a total of roughly 15 hours per monitor per month.

Table 3
Estimating the Total Time that AIN-C Monitors Spend Monthly Carrying Out Their AIN-C-Related Activities

Activity of the Monitor			Average Number of Hours per Monitor per Month		Percent of Time
1. Monthly Weighing Sessions			4.5	including 1 hour for startup/closedown and programming home visits	30%
2. Monthly Home Visits (Follow-up)					
a. Children with inadequate growth	n = 6 @ 1.5 hours		9	per community	
b. Children who did not attend the last AIN-C session	n=3@ 1 hr		3	per community	
c. Sick children	**Total for activities**		3	per community	
d. Mothers with breastfeeding problems	**c through f:**				
e. Children < 6 months not breastfeding	**n = 3 @ 1 hour**				
f. Newborns	**= 3 per community**				
		Subtotal:	15	per community =	
			5	Hours per Monitor per month	34%
3. Curative care visits					
a. Acute respiratory infections/pneumonia	Number of visits : 2				
b. Diarrhea	Number of visits: 6				
c. Other	Number of visits: 1				
	Total:	9 per community =			
	3 per Monitor @ .5 hr		1.5	Hours per Monitor per month	10%
4. Meetings once every 4 months with the community:	1.5 hrs/4 =		0.4	Hours per Monitor per month	3%
5. Monthly health center meetings with all other community volunteers			3.5	Hours per Monitor per month	24%
		Total Time:	**14.9**	**Hours per Monitor per month**	100%

[10] The treatment of children who are ill is usually done by just one of the monitors in a community, not all of them.
[11] These mid-term evaluation household survey-derived parameters were reviewed by two BASICS/Honduras field supervisors and corroborated by them as sound, acceptable approximations of the average monitor's monthly experience.

B. An Activity-Based Description of the Costs of the AIN-C Program

The discussion of the cost of the AIN-C Program will follow the structure of Table 1 and will track the introduction of the program into a health area and its subsequent phasing-in over the course of six years to reach what is regarded as "full-scale" or "fully implemented" within the health area in question. In this analysis it will be assumed that in a given health area, the fully implemented AIN-C Program will cover 10 communities of each health center, a total of 300 communities in each health area. (More on this below.) In identifying the communities in which to start, the sector nurses employ an annually prepared MOH health area-planning tool, the Analysis of the Health Situation or ASIS (Análisis de la Situación de Salud). The ASIS categorizes communities into one of five strata (1 = best-off, 5 = worst-off) based on a weighted average of three indicators:

- proportion of the under five population that is malnourished,
- proportion of the population without access to potable water and
- proportion of the population that does not have basic sanitation (at least latrines).

The discussion will be divided into four sub-sections: (1) one-time start-up activities, which consist of training and community baseline studies (activities #1-#5), (2) the monthly AIN weighing and counseling sessions and follow-up/supervision (activities #6-#8), (3) other activities of the monitors, comprised of (a) monthly meetings of all community volunteers in the local health center (activity #9), (b) other, not elsewhere accounted for, regular monthly activities of the monitors in the community (house calls and curative care advising, activity #10), and (c) tri-annual meetings with the community (activity #11), and (4) the cost of incentives that are provided to monitors (activity #12).

(1) One-Time Start-Up Activities: Training and Community Base-Line Studies (Activities #1 through #5)

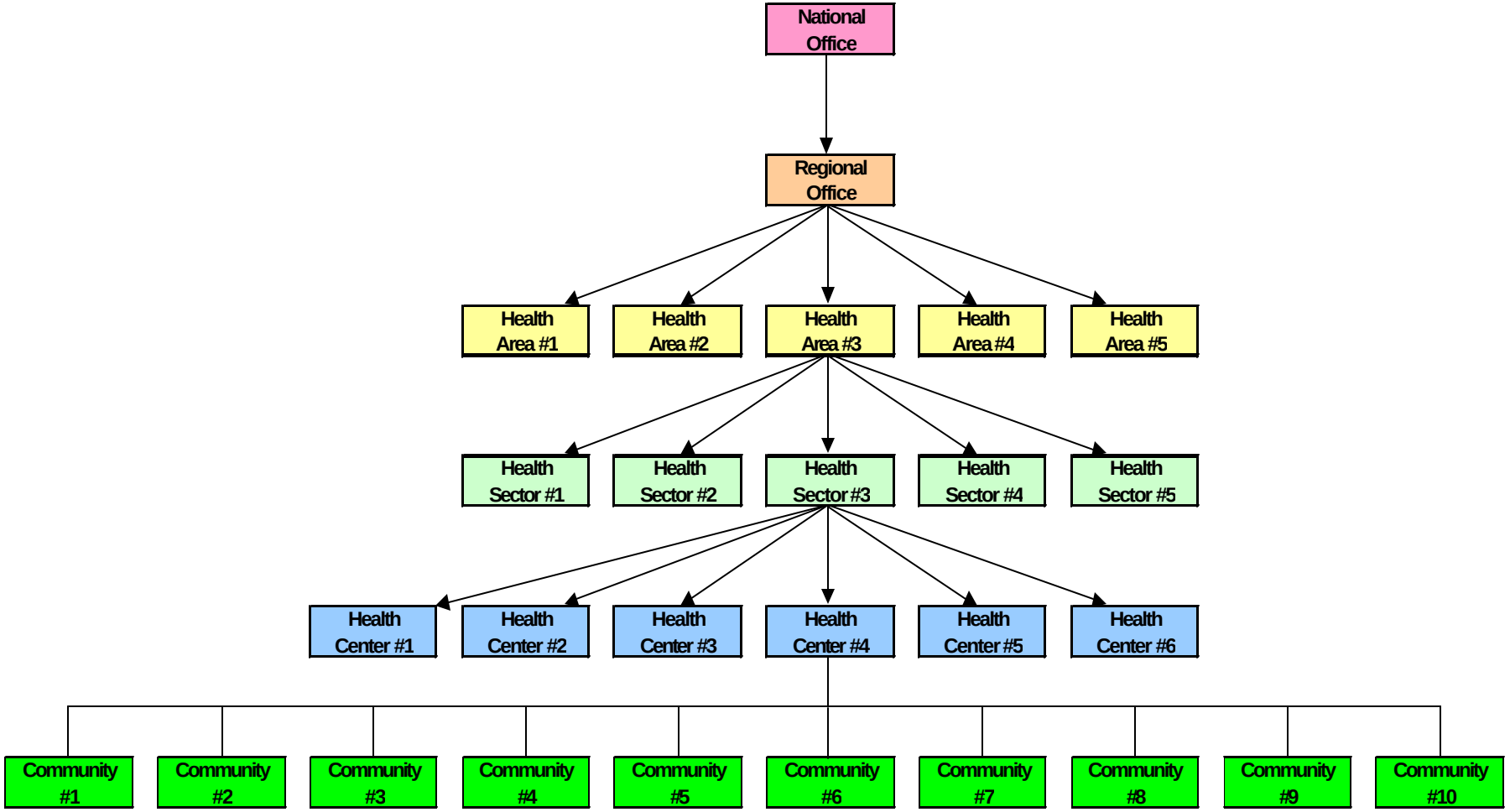
The MOH has followed a training-of-trainers (TOT) approach in implementing AIN-C. In the initial TOT session (Activity #1 in Table 1), national level MOH personnel train MOH regional, area and sector staff in the concepts of child health prevention and promotion—focusing on growth and development—and on how to teach health facility- and community-level personnel to provide these services. The second TOT session (Activity #4 in Table 1) involves the same trainers and trainees, but the topic is curative care, focusing on acute respiratory illness—particularly pneumonia—diarrheal disease, the danger signs of a seriously ill child, and when and how to refer a sick child.

To better understand how the TOT cascades down through the MOH system, it is useful to discuss the structure of the Ministry of Health of Honduras. Figure 1 shows the structure of the MOH. The Ministry is organized into nine health regions. Each region is divided into health areas and each health area is sub-divided into health sectors. There are 42 health areas in the country, an average of between four and five per region.[12] Each health area is comprised of an average of five health sectors, and within each health sector there are generally about six health centers. The health sector office, itself, is generally housed in a health center and is located in a county seat (*cabecera municipal*). The health sector offices are generally located in a relatively large health center—referred to as a CESAMO (Centro de Salud con Médico y Otros or health center with physician and others)—and constitutes the hub of a network comprised of the CESAMO, along with about six smaller, rural health centers, termed CESARs (Centros de Salud Rurales,

[12] One of the regions consists of the Metropolitan region of Tegucigalpa, the national capital, which is comprised of just one area. The remaining 8 regions have a total of 41 areas. Thus it is assumed in Figure 1 that the average region has five health areas.

rural health centers). Generally, there are to 10 to 20 communities per health center. For purposes of elucidation, Figure 1 simplifies things by depicting the relationship between only one of each upper level unit of the Ministry with its subordinate units. For instance, although the national office oversees nine health regions, Figure 1 shows only one regional office in order to keep the diagram relatively simple. Similarly, while each region, each health area, each health sector and each health center has a grouping of subordinate units below it, the relationship of just one such grouping is shown in Figure 1.

Figure 1
The Implementation Structure of the AIN-C Program



Relating the TOT sessions (Activities #1 and #4) to Figure 1, personnel at the national office level train staff from one regional office, together with personnel from two health area offices in the region in question, and all of the health sectors associated with each of the two health area offices. These five-day training sessions generally involve about 16 trainees and 2 facilitators and are usually held in rented sites in the city in which the regional office hosting the session is located (usually a departmental capital). Table 4 shows the number and type of resources required to produce Activity #1. The average cost of these trainings is 85,978 lempiras (US$5,189).[13]

Chronologically, the first training session is Activity #1. After this training is completed, the health sector nurses return to their posts and for each of the health centers in their domains they select two communities in which to begin implementing AIN-C, a total of 12 communities.[14] The selection of communities is guided by the Ministry's criteria that priority be given to the poorest communities, as discussed earlier. The 12 communities (two per health center) that are identified as the first communities in which the AIN-C will be implemented in a health sector are all strata 4 or strata 5 communities.

Activity #2 is referred to as the Base-Line Study (BLS). Its is comprised of two sets of activities. The first component consists of the health sector nurse visiting each of the five health centers in her/his domain and training the nurse auxiliary and either the health promoter or the environmental health technician stationed at the same health center.[15] As part of this activity, these staff-persons meet with leaders of the selected communities to determine if they are interested in their community having an AIN-C Program, and whether they will be supportive of it. If the community leaders are interested and pledge their support, a community meeting is held in which the community selects three persons who it believes will be interested in serving as AIN-C Monitors, volunteers who will carry out the Program.

This activity is more significant than might first appear to be the case for several, somewhat subtle, reasons that are important to explicitly note. The goal is more ambitious than to simply "get the okay" from the community. Meeting with the community leaders is also intended to get these leaders vested in the program. The fact that the community makes this selection, coupled with the commitment that the community leaders must make to support the program—most explicitly by agreeing to meet with the monitors and all interested members in the community once every four months to discuss the Program, the nutrition and health status of children in the community, and possibly address common community nutrition and health problems—serves to empower the monitors. The community meetings are designed primarily to achieve two ends:

1. to give formal recognition to, and to confirm the importance of, the AIN-C Program and the role of the monitor—thereby periodically reaffirming and reinvigorating the motivation of the monitors—and

2. to provide a regular public forum for identifying, discussing and addressing the roots of common community health problems plaguing children in particular (e.g., polluted water

[13] The average June 2002 exchange rate of 16.57 lempiras to US$1.00 will be used to convert lempiras to U.S. dollars throughout this report (Central Bank of Honduras website).

[14] The higher-level facilitators who are trained—those from the regional and health area offices—generally do little training, themselves. They are trained primarily in order to become knowledgeable about and conversant in the Program, and, in the case of the health area staff, to become capable supervisors.

[15] CESARs are usually staffed by one, and occasionally two, nurse auxiliaries. In addition, a health promoter or an environmental health technician or both are assigned to most CESARs. While these latter two positions are generally itinerant, these staff persons do participate in some CESAR activities.

supplies, inadequate waste disposal, common problematic food preparation practices or other inadequate child-rearing practices).

These meetings are important in shaping the community's response to and support of the AIN-C Program.

The second component of Activity #2 consists of the health sector nurse, working with the health center personnel—the nurse auxiliary, the health promoter (or environmental health technician)—and the three monitors to undertake the Base-Line Study. As part of this work, the team develops a map of the community. The map identifies the location of every house and the primary physical characteristics of the environment (e.g., roads, rivers, etc.). The map also identifies every house in which there are one or more children under the age of two, every house in which there is a pregnant woman and it highlights the location of the homes of the three monitors. In addition, the BLS collects information on each family. There is a standardized AIN-C Program BLS tool that is used to record 26 information items on each family, and includes modules on housing/family members, child growth, sickness, feeding, family planning and pregnancy.

After conducting this survey—which is, in essence, a census of the community—the team analyzes the results and presents them to the community. The focus of this analysis and presentation is the nutritional status of the community's children. Implementing Activity #2 generally requires two and a half days and costs about 4,565 lempiras (US$275) per community. See Table 4 for its complete resource requirements.

Table 4
The Cost of the AIN-C Program by Activity

Activity	Number and Type of Participants (Both Trainers and Trainees)	Duration (Days)	Personnel Costs	Per Diems Number	Per Diems Cost/Person*	Per Diems Total Cost	Transport Costs	Materials & Supplies	Refresh-ments	Rental Cost of Site	Equip-ment	Total Cost
1. Institutional Level Training of Facilitators – Preventive Component	2 Central Office Facilitators											
	1 Physician	5	6,626	4.5	248	1,116	1496		125			8,263
	1 Nurse	5	2,729	4.5	248	1,116			125			3,970
	1 Driver	5	1,296	4.5	200	900			125			2,321
Number of Health Areas Participating = 2	2 Regional Office Personnel											
	1 Mother-Child Specialist	5	3,429	4.5	200	900	325		125			4,779
	1 Nurse Auxiliary	5	1,507	4.5	200	900			125			2,532
	1 Driver	5	1,296	4.5	200	900			125			2,321
	4 Health Area Personnel (2 per Health Area)											
	2 Health Area Nurse	5	5,459	4.5	248	2,232	195		250			8,136
	2 Nutrition Auxiliary	5	3,014	4.5	200	1,800			250			5,064
	9 Health Sector Nurse (4.5 per Health Area)	5	24,565	4.5	248	10,044			1125			35,734
	15 Total Number of Participants											
			55,820			**19,908**	**2,017**	**9,228**	**2,375**	**2,750**	**880**	**85,978**
2. Baseline Study												
	1 Facilitator - Health Sector Nurse	2.5	1,365	2	248	496						1,861
	Health Facility Personnel											
	1 Nurse Auxiliary	2.5	791	2	200	400						1,191
	1 Promoter o Environmental Health Tech	2.5	788	2	200	400						1,188
	3 AIN-C Monitors	2	0	2	50	300						300
			2,944			**1,596**		**25**				**4,565**
3. Training Health Facility and Community Level Personnel – Preventive Component	2 Facilitators											
	1 Health Area or Sector Nurse	5	2,729	4.5	248	1,116			125			3,970
	1 Health Sector Nurse	5	2,729	4.5	248	1,116			125			3,970
No. of Health Centers Participating = 2	3 Health Center Personnel (2 Centers)											
	2 Nurse Auxiliary	5	3,014	4.5	200	1,800			250			5,064
	1 Health Promoter or Educator	5	1,545	4.5	200	900			125			2,570
No. of Communities per H. Center = 2	12 Monitors	5	0	5	50*	3,000			1,500			4,500
	15 Total Number of Participants											
			10,017			**7,932**	**-**	**5,849**	**2,125**	**-**	**1,300**	**27,883**
4. Institutional Level Training of Facilitators –Curative Component	2 Central Office Level Facilitators											
	1 Physician	2	2,210	1.5	248	372	1496		50			4,129
	1 Nurse	2	1,092	1.5	248	372			50			1,514
	1 Driver	2	518	1.5	200	300			50			868
Number of Health Areas Participating = 2	2 Regional Office Personnel											
	1 Mother-Child Specialist	2	1,371	1.5	200	300	325		50			2,047
	1 Nurse / Nutrition Specialist	2	1,092	1.5	248	372			50			1,514
	1 Driver	2	518	1.5	200	300			50			868
	4 Health Area Personnel (2 per Area)											
	2 Health Area Nurse	2	2,184	1.5	248	744	195		100			3,223
	2 Physician or Nurse	2	3,302	1.5	248	744			100			4,146
	10 Health Sector Nurse (5 per Area)	2	10,918	1.5	248	3,720			500			15,138
	16 Total Number of Participants											
			23,289			**7,224**	**2,017**	**127**	**1,000**	**2,750**	**430**	**36,753**
5. Training Health Facility and Community Level Personnel – Curative Component	2 Facilitators											
	1 Health Area or Sector Nurse	4	2,184	4	248	992			100			3,276
	1 Sector Nurse	4	2,184	4	248	992			100			3,276
No. of Health Centers Participating = 2	3 Health Facility Personnel											
	2 Nurse Auxiliary	4	2,411	4	200	1,600			200			4,211
	1 Health Promoter or Educator	4	1,236	4	200	800			100			2,136
No. of Communities Per H. Center = 2	12 Monitors	4	0	4	50*	2,400			1,200			3,600
4 Communities Participating	15 Total Number of Participants											
			8,014			**6,784**	**-**	**866**	**1,700**	**1,590**	**-**	**18,954**
6a. Monthly AIN-C Meeting: With Followup by the Nurse Auxiliary & the Health Sector Nurse	1 Health Sector Nurse: 1/2 day dedicated to AIN-C	0.5	273	0.5	248	124						
	1 Nurse Auxiliary: 1/2 day dedicated to AIN-C	0.5	158	0.5	200	100						
	1 Driver: 1/2 day dedicated to AIN-C	0.5	130	0.5	200	100						
	3 Monitors	0.56	0									
			561			**324**	**195**	**4***				**1,083**
6b. Monthly AIN-C Meeting: With Followup by the Nurse Auxiliary (only)	1 Nurse Auxiliary	0.5	158	0.5	200	100						
	3 Monitors	0.56*	0									
			158			**100**		**2***				**260**

Table 4 continued:

6c. Monthly AIN-C Meeting: With no followup	3 Monitors	0.56	0								
											0
7a. Supervision by Health Area Personnel: 2 visits/ year to the Sector (only) AIN-C share = 25%	1 Health Area Nurse 1 Nutrition Aide 1 Driver	1.5 1.5 1.5	819 462 389	1.5 1.5 1.5	248 200 200	372 300 300					1,191 762 689
			1,669			972	520	2	Pro-rated at	25%	788
7b. Supervision by Area & Sector: 1 visit/yr to the Center with the Sector Nurse AIN-C share = 25%	1 Health Area Nurse 1 Nurse Auxiliary 1 Driver 1 Health Sector Nurse	1.5 1.5 1.5 1.5	819 462 389 819	1.5 1.5 1.5 1.5	248 200 200 248	372 300 300 372					1,191 762 689
			2,478			1,344	325	2	Pro-rated at	25%	1,037
7c. Supervision by Area: 1 visit/year to Center AIN-C share = 25%	1 Health Area Nurse 1 Nurse Auxiliary 1 Driver	1.5 1.5 1.5	819 462 389	1.5 1.5 1.5	248 200 200	372 300 300					1,191 762 689
			1,669			972	293	2	Pro-rated at	25%	732
8. Supervision by the Sector Nurse: 2 visits/ year to the Center (only) AIN-C share = 33%	1 Health Sector Nurse 1 Driver	0.5 0.5	273 130	1 1	248 200	348 200					
			403			448	130		Pro-rated at	33%	324
9a. Monthly Meetings at the Health Center with other volunteers and resupplying the Monitor: The first cohort	1 Nurse Auxiliary 1 Promotor 1 Environmental Health Technician 6 Monitors	0.5 0.5 0.5 0.5	158 154 161 0								
			473				20	297			788
9b. Monthly Meetings at the Center with all volunteers & resupplying the Monitor: All subsequent cohorts	6 Monitors	0.5	0								
			-				20	297			222
10a. Quarterly Meeting with the Community: The First Meeting	1 Health Sector Nurse 1 Driver 1 Nurse Auxiliary 3 Monitors	0.5 0.5 0.25 0.25	273 130 79 0	0.5 0.5	248 200	124 100					
			482			224	195				901
10b. Quarterly Meeting with the Community: The Second Meeting	1 Nurse Auxiliary 3 Monitors	0.1875 0.1875	59 0								
			59								59
10c. Quarterly Meeting with the Community: All meetings subsequent to the second one	3 Monitors	1.0	0								
			-								0
11. Other Monthly Activities of the Monitor (Home visits and curative care visits)	3 Monitors	0.813	0								
			-								0
12a. Incentives given to the the Monitors each year: The first year	3 Monitors										
											729
12b. Incentives given to the the Monitors each year: After the first year	3 Monitors										
											459

* All per diem calculations assume Zone II payment levels. Payments made to Monitors are technically a stipend (rather than a per diem), that is intended to cover all of their costs and provide an honorarium.

Variables Names	Location
NumberOfCommunitiesPerUPS	='Table 4'!$A$191
NumberOfKidsU2PerCommunity	='Table 4'!$A$188
NumberOfKidsU2PerMonitor	='Table 4'!$A$189
NumberOfMonitorsPerCommunity	='Table 4'!$A$190
NumberUPSperOperatorsLevelTraining Perd_Titles	='Table 4'!$A$196
RefreshmentsPerPersonPerDay	='Table 4'!$A$192
TransportationCostPerKm	='Table 4'!$A$194
ValueOfMonitorTime	='Table 4'!$A$195
WorkDaysPerYear	='Table 4'!$A$193
ExchangeRateAvgJune2002	='Table 4'!$A$197

Current Variable Name Values:	Base scenario assumptions, explanations and data sources.
25	Base scenario assumes average number of <2 year old children per community = 25
8	Base scenario assumes 8 children <2 per Monitor
3	Base scenario assumes 3 Monitors per community
2	Base scenario assumes 2 communities per UPS
25	Base scenario assumes the average cost of providing refreshments per person per day = 25 Lempiras
240	Base scenario assumes the total non-weekend days per year=260 minus the 10 official national holidays minus 10 vacation days = 240 working days per year
3.253	Base scenario assumes: 3.253 Lempiras/km = author's adjusted cost estimates of SOPTRAVI. Assumes 80% on dirt roads, 20% on pa
0	Base scenario assumes Monitor's time value = 0. Alternatively, it may be assumed that they are paid the equivalent of the minimum daily agricultural wage = 43.6 Lempiras
2	Base scenario assumes 2 UPS per Facilitator Training in either Preventive or Curative Care
16.57	Base scenario = 16.57 Lmps = US$1.00

Activity #3 consists of the second tier of prevention and promotion training in which the facilitators trained in Activity #1, in turn, train health facility and community personnel.

The trainers in Activity #3 are the health area nurse and the health sector nurse. In each of these training sessions, the personnel of two health centers are trained. Generally the trainees are the nurse auxiliaries, who are the staff-persons of the CESARs, together with the monitors and either the health promoter or the environmental health technician. These sessions generally have an average about 16 trainees. These trainings are five-day sessions that are generally conducted in the county capital or a town conveniently situated among the health centers and communities from which the trainees are drawn. The facilitators and the trainees all receive per diems for participating in these trainings. Beyond the per diem, regular MOH staff-persons do not receive any special compensation for this training. The cost of their participation is the value of the time they spend in this activity—the regular average total hourly remuneration—their per diem and the cost of transportation in getting to and from the training site. Other costs of the training include materials and supplies, refreshments, equipment and the rental cost of the training site or facility. (See Annex 1 for details about the number and types of items included in the (1) materials and supplies and (2) equipment for the different training sessions.) As Table 4 shows, the average cost of activity #3 is 27,083 lempiras (US$1,634) per training, or about 6,771 lempiras (US$409) per community.

Activities #4 and #5 are curative care training sessions. Activity #4 is the institutional level training of trainers session. It involves the same number and composition of facilitators and trainees as the preventive training session #1. Activity #5 is the community level training session. It involves the same number and composition of facilitators and trainees as the preventive training session #3. Activity #4 is a two-day affair in which the focus is on teaching techniques. (The trainees are health professionals who are already knowledgeable about the diagnosis and treatment of the disease processes employed in the technique.) Activity #5 is a four-day session in which the Activity #4-trained facilitators, in turn, train the health center and community-level staff.

While MOH norms call for implementing Activity #5 as soon as all of the monitors associated with a particular health center are deemed proficient in carrying out the monthly weighing and counseling sessions—which may take only the four month minimum established by Program guidelines—personnel, time and financial constraints generally preclude Activity #6 being implemented until the local AIN-C Program has been in operation for at least one year.[16] The estimated cost per training activities #4 and #5 are 36,753 lempiras (US$2,218) and 18,954 lempiras (US$1,144), respectively. Table 4 provides more detail about the composition of these costs.

[16] The judgment as to whether or not a monitor is "proficient" in carrying out the AIN-C Program, and thereby ready for Activity #5-curative care training—is made using a supervisory assessment tool that will be discussed later in the text.

(2) Monthly AIN Weighing & Counseling Sessions and Follow-Up/Supervision (activities #6 through #8)

The heart of the AIN-C Program is the monthly weighing and counseling sessions in the community. For purposes of the cost analysis, rather than a monthly session constituting an activity, in and of itself, the monthly sessions have been differentiated by the type of follow-up and supervision, if any, that accompanies them. So differentiated, there are three different types of monthly AIN-C sessions, including:

- Activity #6a, with follow-up and participation by the health center nurse auxiliary and the health sector nurse,
- Activity #6b, with follow-up and participation by only the health center nurse auxiliary and
- Activity #6c, with no follow-up, in which the monitors, alone, conduct the monthly session.

The costs per meeting of these sessions are 1,083, 260 and 0 lempiras (US$65, $16, and $0), respectively. Table 4 provides more detailed information about the persons attending and the composition of the costs involved in these meetings.

Table 5 shows the AIN-C Program's first year schedule of monthly meetings by the type of MOH staff-person(s) supervising, if any. AIN-C Program guidelines call for the first monthly AIN-C session to be attended by both the health sector nurse and the health center nurse auxiliary. The health center nurse auxiliary is supposed to attend the first four sessions. The relatively heavy dose of supervision and follow-up during these first sessions is intended to better ensure that the program gets off to a good start and that the monitors quickly develop sound routines. In helping to foster the expeditious development of a well-functioning program, the health center nurse auxiliary assesses the monitors performance using the AIN-C Follow-up Form #1, and the health sector nurse assesses the community program by applying AIN-C Supervisory and Follow-up Form #2. For a community program to be regarded as functioning adequately, its monitors must achieve a score of at least 95 percent on Form #1. The application of Form #1 constitutes a proficiency test (previously mentioned) that the monitors are expected to pass in order for them to become eligible for the curative care component training (Activity #5). It is thought that if the curative care component is taught before this level of proficiency is attained that the monitor's attention will be dissipated, thereby interfering with her/his being able to adequately learn and implement the promotion/prevention component of the AIN-C Program, which, is regarded as the most important aspect of the Program. Moving onto the curative care component prematurely, it is feared, will give too much emphasis to that component at the expense of short-changing the principle focus of the program, the promotion/prevention component.

Table 5
Follow-up and Supervisory Visits in the AIN-C Program: Monthly Weighing and Counseling Sessions by Type of Follow-up and Supervision by Program Year

Monthly Sessions	Sector Nurse (1 visit every 4 months)	UPS Auxiliary (1 visit every 2 months)	Monitors
Year 1			
1	X	X	X
2		X	X
3		X	X
4		X	X
5			X
6		X	X
7		X	X
8		X	X
9			X
10		X	X
11		X	X
12			X
Total	1	9	12
Year 2 and Thereafter			
1			X
2		X	X
3			X
4		X	X
5			X
6		X	X
7			X
8		X	X
9			X
10		X	X
11			X
12		X	X
Total		6	12

Year 1

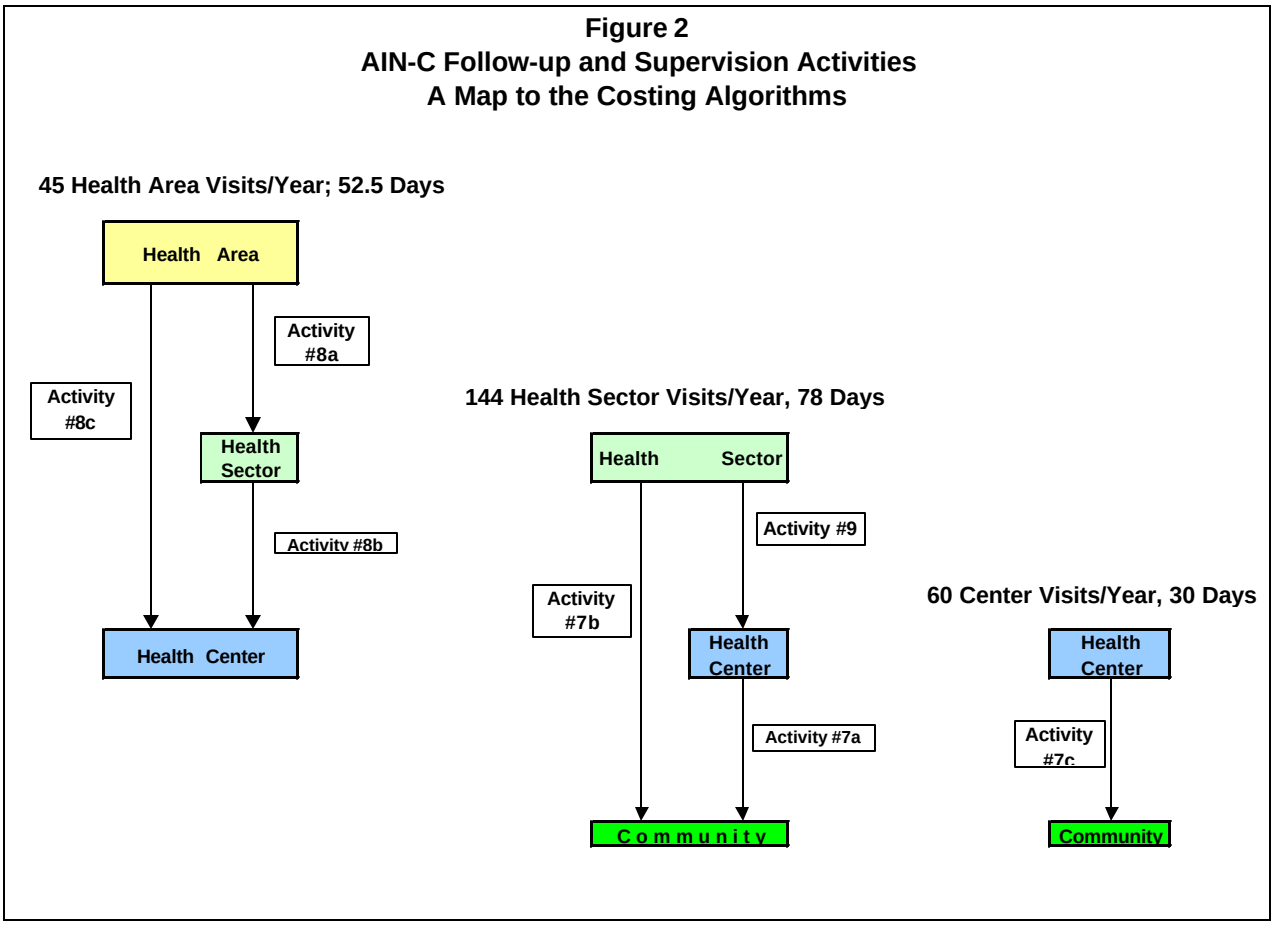
Staff Participating	Costing Activity #	No. of Sessions Per Year
Sector Nurse and Auxiliary	7a	1
Only Auxiliary	7b	9
Monitor Unsupervised	7c	2
	Annual Total:	**12**

Year 2 and Thereafter

Staff Participating	Costing Activity #	No. of Sessions Per Year
Only Auxiliary	7b	6
Monitor Unsupervised	7c	6
	Annual Total:	**12**

The lower portion of Table 5 shows the AIN-C Program schedule follow-up and supervisory visits in year two of the program and thereafter. The major difference between the first and subsequent years is in the reduced intensity of the follow-up visit schedule during the first four months of the Program in Year 1. In Year 2 (and thereafter) there are two fewer visits by the nurse auxiliary and two more sessions when the monitor is unsupervised.

Figure 2 shows the three types of supervision and follow-up involved in the AIN-C Program.[17]



The left-hand third of the Figure shows health area staff supervision activities. The professional staff of the Health Area office generally sets aside one week of each month to conduct field supervision. The health area staff makes a supervisory visit to each health sector office (activity #7a) about once every 4 months. These visits generally require one or two days, an average of 1.5. With, on average, 5 health sectors per health area, the health area staff annually makes 15 health sector visits, devoting roughly 20 days a year to this activity. These visits cost an average of 3,152 lempiras, and roughly one-quarter of the total time devoted to them is spent on AIN-C. Thus the AIN-C portion of the cost of one of these visits is 788 lempiras (US$48). In about one-third of these visits to the health sector, the health area staff first visit the health sector and then proceed, accompanied by the health sector nurse supervisor, to a health center, usually one which has been experiencing some type of special need or problem (activity #7b). Annually, roughly five such visits are made; only about one in every six health centers in the health area receives this type of supervisory visit. These visits cost an average of 4,148 lempiras, of which, one-

[17] Supervision is generally used to refer to monitoring and technical assistance related to activities conducted within an MOH facility, whereas follow-up generally refers to activities conducted within the community.

quarter or 1,037 lempiras (US$63) is the AIN-C Program's share, the remainder of the time being devoted to other programmatic themes and activities.

The remainder of the health area staff annual supervisory visits is devoted to direct supervision of the health centers. These visits (activity #7c) consist of the health area staff going directly to the center. These trips average about one day per health center, and, on average, each health center in the health area receives one such supervisory visit per year. These visits cost an average of 2,928 lempiras. About one-quarter of the time spent in these visits is devoted to AIN-C. Thus AIN-C's share of the cost of each visit is 732 lempiras (US$44). With about 30 health centers per health area, there are approximately 30 supervisory trips directly to a health center, unaccompanied, and health area staff devotes about 30 days annually to this activity. The total amount of time that health area staff spend supervising, therefore, is roughly 50 days a year, 20 days visiting the health sectors (activity #7a, one-third of which involve #7b) and 30 days visiting the health centers.

The health area staff's supervisory visits to both the health sectors and health centers are multipurpose visits. They are used to review records and reporting, as well as to provide counsel, technical assistance and general support, and to trouble-shoot any particular problems or issues the health sector or centers may be confronting. On the basis of interviews with MOH staff at different levels of the organization, it is estimated that 25 percent of the health area staff's time devoted to these supervisory visits to both health sectors and health centers is devoted to AIN-C. Given that AIN-C is only one of nine MOH programs, the fact that a disproportionate amount of time is dedicated to it reveals the relatively greater importance attributed by the Ministry to the Program. [18]

The middle portion of Figure 2 shows supervision and follow-up done by the nurse supervisor of the health sector. Each nurse supervisor visits each of the six health centers in her domain once every three months (activity #8). These visits are from one-half to one full day in duration, and cost an average of 972 lempiras. Roughly one-third of these visits are dedicated to AIN-C-related activities, making the AIN-C Program share of the cost of these supervisory visits 324 lempiras (US$20).

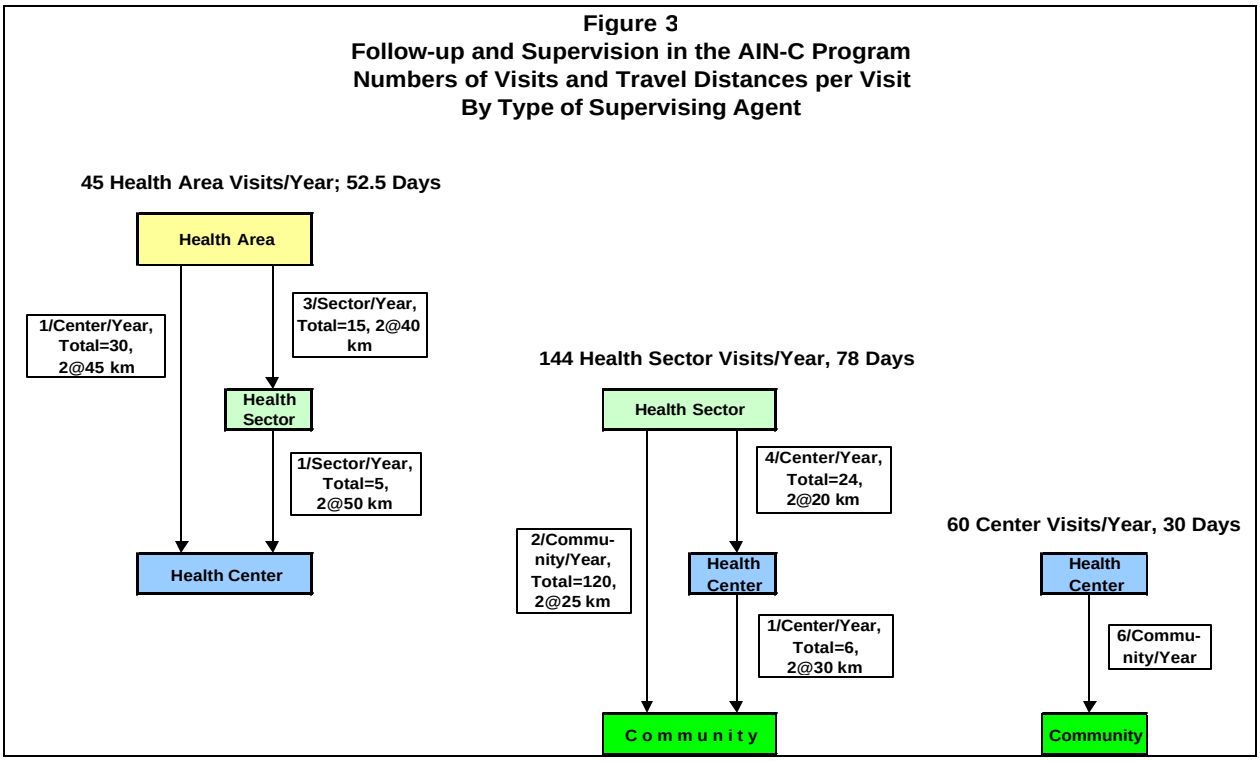
About once a year when the nurse supervisor visits a health center she accompanies the nurse auxiliary of the health center to one of the center's communities (activity #6a). Generally, an effort is made to coordinate this community visit so that it coincides with the AIN-C Program's monthly weighing and counseling session. There about six such visits to communities in each health sector in a year. Hence, the health sector nurse supervisor makes this type of supervisory visit to only a fraction (roughly 5 percent) of all of the communities in her/his domain in a given year .[19] These visits cost an average of 1,083 lempiras (US$65).

Returning again to Figure 2, the right-hand third of the figure shows follow-up by the nurse auxiliary of the health center to the community. On average, the nurse auxiliary makes a half-day visit to each of roughly 10 communities in her domain once every other month. The nurse auxiliary attempts to ensure that her/his visit coincides with the monthly AIN-C weighing and counseling session. These visits (activity #6b) cost an average of 260 lempiras (US$16).

[18] AIN-C is one of nine MOH programs. The other programs are immunization, integrated management of childhood illness, women's health, malaria/dengue, water and sanitation, AIDS/HIV, TB and oral (dental) health.
[19] Five percent = 1 community per health center per year = 6 communities per year. 6 / (20 communities per health center per health sector, 6 health centers per health sector = 120 communities) = .05.

Figure 3 shows the average numbers of visits and estimated travel distances involved in each type of supervisory and follow-up visit.

Figure 3
Follow-up and Supervision in the AIN-C Program
Numbers of Visits and Travel Distances per Visit
By Type of Supervising Agent



(3) Monthly Community Volunteer Meetings in the Health Center, Other Monthly Monitor Activities and Tri-annual Community Meetings (Activities #9 though #11)

Activity #9 consists of the monthly meeting of all community health volunteers that takes place in the health center, and which is taken advantage of to re-supply the AIN-C monitors. The meeting, itself, has already been described. Table 6 shows the AIN-C materials and supplies, together with their respective quantities, that are required annually to maintain the Program in a community. The annual recurrent cost of AIN-C supplies and materials is 1,241 lempiras (US$75) per community. The bottom portion of Table 6 shows the types, quantities and values of medicines and vitamins annually distributed by AIN-C monitors in a community.[20] The value of the medicines and vitamins is 1,106 lempiras (US$67), 89 percent of the value of all supplies and materials used in a community in a year. Combining the monthly average of these supplies and materials with the personnel and transportation costs of the first such meeting (activity #9a) in each health center yields an average monthly cost of 700 lempiras (US$42). Each subsequent year, as additional groups of communities and monitors are brought into the program, the costs of the health center personnel devoted to these monthly meetings do not change. The amount of

[20] All of these supplies, including the medicines and vitamins are provided by the MOH. The medicines and vitamins are provided out of the health center's stock. No special allocations are made specifically for the AIN-C Program. Hereafter in this report these medicines and vitamins will be referred to as simply "medicines" for ease of exposition.

Table 6
Annual Recurrent Cost per Community of AIN-C Supplies and Materials

Quantity	Item	Unit Cost	Total Cost (Lmps.)
1	AIN List of Children Less than 2 Years Old in the Community	22.0	22.0
2	Booklets	10.0	20.0
2	Eraser	5.0	10.0
2	3-colored pencil	15.0	30.0
15	Child health card	1.5	22.5
3	Daily register of sick child visits	0.5	1.5
36	Referral slips	0.5	18.0
12	Monthly summary of AIN activities (5 indicators)	0.5	6.0
3	Monthly graphs of the 5 AIN indicators (6 months per page)	0.5	1.5
6	House visit planning page	0.5	3.0
	Total:		**135**
	Medicines		
12	Trimetropine Suflametoxazol	4.0	48
40	Paracetamol	4.0	160
104	Ferrous Sulfate*	2.6	271
50	Vitamin A capsule	0.4	20
125	Litrosol (2 per child + 75 for curative care visit treatments)	4.0	500
	Sub-total:		**999**
	Total per Community per Year:		**1134**

*Annual community requirements for iron tablets:

4 to 11 months: one-half tablet per day, 3 jars per year		32
12 to 24 months: One tablet per day, 4 jars per year		48
Premature or underweight infants, starting at 30 days from birth, 3 tablets per day, 6 bottles per year		24
	Number of jars/year:	104

time devoted to AIN-C reportedly remains about constant and the amount of time spent on each community's AIN-C Program is reduced in order to be able to accommodate all AIN-C Program activities in the same half-day that is devoted to the Program. Accordingly, with the subsequent introduction of the Program into new communities, the only change in costs is in those costs-related to the two communities (with their six monitors) in which the Program is newly started each year. The only additional recurrent monthly cost associated with the introduction of the program into new communities is the relatively minor cost of additional transportation and supplies for monitors. These costs (referred to as activity #9b in Table 4) amount to a monthly average of 227 lempiras (less than US$14) per pair of communities.

Activity #10 is comprised of the three annual AIN-C Program meetings with the community. The composition of attendees varies, depending upon whether or not the Program is in its first year of operation in the community. The first such meeting held in a community is attended by the health sector nurse supervisor and the nurse auxiliary from the local health center, together with the three monitors, so as to better ensure that it is structured and managed appropriately, and addresses community health and nutrition issues (activity #10a). This first meeting is intended to serve as a model and to establish the general structure and to set the general tone for subsequent AIN-C meetings with the community. The only health sector representatives attending the second community meeting are the nurse auxiliary and the monitors. This meeting (activity #10b) is intended to be transitional in nature—one which is intermediate the first one with both the health sector nurse supervisor together with the nurse auxiliary and the third one, which the monitors manage themselves, alone. The goal in conducting this meeting, therefore, is to (again) support the monitors and corroborate both the structure and the tone set in the first meeting. All subsequent AIN-C meetings with the community—referred to as activity #10c in Table 4—are attended and managed by the monitors alone (activity #10c). The average costs of these three different community meetings are 901, 59 and 0 lempiras (US$54, 4 and 0), respectively.

Activity #11 is a residual category. It captures the time that monitors spend on activities that are not included in some other, already-identified activity, and consists of the time the monitors spend each month on house visits and curative care consultations. These activities average about 6.5 hours per monitor per month, or 19.5 hours per community per month.

(4) Monitor Incentives (Activity #12)

As already noted, the AIN-C monitors are volunteers. In general, monitors are motivated primarily by non-monetary or "moral" incentives, as opposed to monetary or "material" incentives. The moral incentives that motivate AIN-C monitors include a desire to contribute to their community, to be regarded as a community health resource, and the stature and respect that their position as a monitor earns them in the community. Honduras has a long and well-established tradition of voluntarism, particularly in the health sector. In addition to the AIN-C monitors there are a variety of other MOH-sponsored monitors, many of which have been developed to focus community attention and to provide the community with an identified front-line provider for addressing a particular type of public health problem. Other community volunteers working in health include:

- pneumonia volunteers,
- voluntary collaborators (referred to as "Col-Vols, after the Spanish term, *colaboradores voluntarios*—to distinguish this otherwise generic title), who are community malaria and dengue agents,
- nutrition guardians or protectors (*guardianes de nutrición*),

- a type of a less specialized, more of health generalist position, the health guardians or protectors (*guardianes de salud*), and
- traditional midwives and birth attendants (*parteras, comardronas*), many of whom charge for or expect to receive some "voluntary contribution" for their services.[21]

A variety of Honduran authorities—the MOH, as well as local community leaders, mayors and municipal governments—provide monitors with some incentives for their AIN-C-related services, both because they want to demonstrate their appreciation for the monitors' efforts and probably (though perhaps to a lesser extent) because they recognize that voluntarism has its limitations. Table 7 presents the various types of incentives that AIN-C monitors receive, the frequency with which they receive them and their estimated costs. It is noteworthy that the program consciously identifies a system of incentives for the AIN-C monitors each year; i.e., the incentives provided to the monitors over the course of a year are not the result of a series of ad hoc decisions. Upon completion of their promotion/prevention training session, monitors receive an identification card recognizing them as a community health agent, a diploma recognizing their having completed AIN-C training and an AIN-C carrying bag in which they keep their various AIN-C-related materials. The monitors receive these items from the MOH. One of the purposes of the identification card is to provide a formal, official means by which the MOH establishes that the monitor is a community health volunteer. This is important because, by law, all "active community health personnel" are exempted from paying MOH user fees (*Reglamento y Manual de Fondos Recuperados*, Legislative Decree 93-68, September 1990, page 11). MOH staff customarily extend this exemption policy to include members of the monitor's immediate family, as well (Fiedler, 2000, page 65). Possession of the identification card entitles the monitor not only to free care, but also to priority care; community health personnel are not required to wait in line before being seen by a provider. With average waiting times at MOH facilities frequently exceeding more than two hours, this may be regarded as a valuable perquisite to being a monitor. Moreover, the value of the care that is received free-of-charge can be an important source of motivation, especially for the typical monitor, who is a woman living in rural Honduras.[22] Average MOH user fee charges are 5 lempiras per outpatient visit. The average number of visits per person per year in Honduras is 2.1 and the average family size is 3.9. Thus the estimated value of the free outpatient care that a monitor is provided annually is 41 lempiras. The ID card also entitles the monitor to free inpatient care in MOH inpatient facilities. On average, 2.2 percent of Hondurans living in rural areas are hospitalized each year. Those who obtain their care from an MOH facility pay the facility an average of 109 lempiras for their care. Thus, the annual value of averted inpatient charges that monitors, on average, receive is 9 lempiras (= 0.022 x 3.9 x 109), making the total annual value of free MOH care that the average monitor receives 50 lempiras. Another moral incentive that monitors receive annually is a letter of recognition from the director of their MOH regional office. In addition, most (an estimated 80 percent of) health centers host a party or dinner at the end of the year to which they invite all community health personnel. This too is a means for recognizing and expressing thanks to the volunteers. These activities are usually financed either by the health center (from its user fee revenues) or by the municipal government. The average cost per monitor of this event is 100 lempiras.

[21] Many of the individuals serving in these different volunteer capacities have been incorporated into the AIN-C now that the AIN-C Program has become the community integrated child health and nutrition program for the MOH.
[22] Honduras' 2001 per capita GNP was US$925 (www.bch.hn). This average, however, masks a highly uneven distribution of income. Sixty-one percent of Hondurans live in poverty (ENIGH, 2000).

Table 7
Incentives Provided to the AIN-C Program Monitors

Type of Incentive	Frequency with which they receive them	Cost (Lempiras)
Identification card*	only once	30
Free MOH health care*	annually	50
Diploma	only once	3
Carrying bag	only once	50
Letter or Recognition/Thanks (from the Regional Office)	once each year	2
Party or dinner at the end of the year**	80% receive it, once each year	80
Piñata-International Children's Day**	33% receive it, once each year	28
	Cost-first year:	**243**
	Cost-each year after the first year:	**160**
Average hourly cost of a monitor* **	**First year:**	**1.36**
	Each year after first year:	**0.90**

*The identification card entitles the Monitor and members of her family to care free-of-charge from any of MOH facility. They are entitled to priority care, meaning they do not have to wait in line. Average user fee charge is 5 Lempiras per outpatient visit. The MOH consultation rate is 2.1 visits per person per year and the average family size is 3.9. Thus estimated outpatient savings are 41 lempiras (= 5 * 2.1 * 3.9). The MOH hospitalization rate in rural areas is 2.2% and the average user fee charge per MOH hospital stay is 109 lempiras. Thus the average hospitalization cost savings are 9 lempiras (= 109 * .022 * 3.9). Total average MOH user fee savings per monitor are 50 lempira per year.

**Usually financed by the health center from its user fee revenues or by the muncipality.

***Does not include training stipends received for activity #1 in first year or activity #4 in second year. Total annual time is from Table 2, 14.9 hours per month, 178.8 hours per year.

Another incentive that an estimated one-third of monitors receive is a piñata, which is customarily provided to the monitors for their children on UNICEF's International Children's Day.[23] Usually either the health center or the municipal government pays for the piñata. A piñata generally costs about 85

[23] A piñata is a *papier maché* vessel, usually constructed in the form of an animal, that is filled with candies and perhaps small toys. Children take turns being blind-folded and swinging a stick at the suspended piñata, hoping to break it open. When it is broken, the candies and toys fall and all of the children scamper to get some of the "goodies" in a free-for-all.

lempiras. (In the case of these two last incentives, which are not universally provided, the average per monitor cost is pro-rated (multiplied) by the proportion of monitors who it is estimated receive them.)

The one-time nature of several of these incentives makes the cost of incentives greater in the first year of the AIN-C Program, relative to subsequent years. As may be seen in Table 7, it is estimated that the first year cost of incentives per monitor (exclusive of training stipends) are 243 lempiras (US$15), and the annual cost per monitor thereafter (again, excluding stipends she/he may have received during the second year's curative care session) is about 160 lempiras (US$10). Dividing the annual value of these incentives by the number of hours that monitors annually work on AIN-C-related activities, one obtains the average hourly cost of a monitor. During the first year of a community's AIN-C Program, this cost is 1.36 lempiras. In subsequent years, it falls to 0.9 lempiras per hour.[24]

IV. THE COST OF IMPLEMENTING THE AIN-C PROGRAM IN A HEALTH AREA

A. TOTAL COST PER HEALTH AREA

As has already been noted, within a given health area, the AIN-C Program is phased-in over a period of six years. Thus far, the focus of the discussion has been on activities and the cost of a single activity. To develop cost estimates of (1) phasing-in the program in an entire health area and (2) the long term, annual recurrent costs of the program, it is necessary to describe how the phasing-in is structured. How many of the 13 different activities that have been identified are undertaken each year, and how many years are required to complete the phasing-in? Starting at the top of the portion of the MOH structure with which we are concerned—i.e., with the health area—and moving sequentially down the hierarchical layers, the number of entities and individuals involved in the program multiplies rapidly. The program begins being implemented in one health area and its five health sectors, with each of the five health sectors working with its six health centers. Thus, in the first year in one health area, the program is being implemented in all 30 of its health centers simultaneously. In the first year of implementing AIN-C, each of the 30 health centers works initially with two of its communities, so there are a total of 60 communities involved in the first year in the one health area. In each of the 60 communities, three monitors are trained. Thus, in the first year of implementing AIN-C in a single health area, a total of 180 monitors are trained.

Tables 8 and 9 are provided to facilitate the understanding the number of each of prevention/promotion and curative care trainings that are being conducted at each of the various levels within the health area. Table 8 shows the structure, number and cost of the program's training activities (#1 and #3) in a given health area in Year 1. Only one activity #1 training session is required to begin implementing the program in a health area, and only half of its costs, 42,989 lempiras, are assigned to the cost of a single health area since the single training session involves two health areas. A total of 15 activity #3 sessions are required to train all of the monitors in two communities of every health center. The total cost of those workshops is 406,243 lempiras, and the cost of all Year 1 training in one health area is 449,231 lempiras.

[24] These average hourly costs per monitor are exclusive of the stipends they receive for attending training sessions--activity #1 in the first year and activity #4 in the second year of the Program. The stipends were excluded because they are supposed to cover the monitors' lodging and food expenses, as well as provide them with an honorarium for attending the trainings. If the stipends are included in the calculation, the monitor's average hourly compensation in Year 1 is 2.25 lempiras. In Year 2 it is 1.71 lempiras, and in Year 3 it is 0.9 lempiras.

The structure of Table 9 parallels that of Table 8. Table 9 shows the numbers, types and costs of training workshops for Year 2. The training workshops of Year 2 are the curative care training sessions. Again, only a single facilitator training sessions (activity #4) is required and only half of its costs, 18,377 lempiras, are assigned to a single health area. There are 15-activity #5-training sessions, and their total cost is 284,307 lempiras. The total cost of Year 2 training workshops is 302,683 lempiras.

Table 8
The Cost of Promotion and Prevention Training Activities (#1 and #3) Involved in Implementing the AIN-C Program: Year One

		Cost per Activity	Number of Sectors	Number of Centers	Number of Communities	Number of Monitors
Year 1						
Activity 1: Institutional Level Training of Facilitators--Preventive Component => 2 Health Areas participating		**85,978**				
In Each Health Area =>						
In Sector #1 =>			1			
Activity 3: Training Health Center and Community Level Personnel--Preventive Component		**27,083**				
The number of health centers participating in one workshop is:	2			2		
For each health center that is participating, the average number of communities participating is:	2				4	
In each of the communities participating, the average number of children participating is:	25					
In each of the communities, the average number of monitors participating is:	3					12
Activity 3: Training Health Center and Community Level Personnel--Preventive Component		**27,083**				
The number of health centers participating in one workshop is:	2			2		
For each health center that is participating, the average number of communities participating is:	2				4	
In each of the communities participating, the average number of children participating is:	25					
In each of the communities, the average number of monitors participating is:	3					12
Activity 3: Training Health Center and Community Level Personnel--Preventive Component		**27,083**				
The number of health centers participating in one workshop is:	2			2		
For each health center that is participating, the average number of communities participating is:	2				4	
In each of the communities participating, the average number of children participating is:	25					
In each of the communities, the average number of monitors participating is:	3					12
Total Number of Activity #3 Workshops in Health Sector #1:		**3**	1	6	12	36
Cost of the Workshops in Health Sector #1:		**81,249**				
In Sector #2 =>			1			
Activity 3: Training Health Center and Community Level Personnel--Preventive Component		**27,083**				
The number of health centers participating in one workshop is:	2			2		
For each health center that is participating, the average number of communities participating is:	2				4	
In each of the communities participating, the average number of children participating is:	25					
In each of the communities, the average number of monitors participating is:	3					12
Activity 3: Training Health Center and Community Level Personnel--Preventive Component		**27,083**				
The number of health centers participating in one workshop is:	2			2		
For each health center that is participating, the average number of communities participating is:	2				4	
In each of the communities participating, the average number of children participating is:	25					
In each of the communities, the average number of monitors participating is:	3					12
Activity 3: Training Health Center and Community Level Personnel--Preventive Component		**27,083**				
The number of health centers participating in one workshop is:	2			2		
For each health center that is participating, the average number of communities participating is:	2				4	
In each of the communities participating, the average number of children participating is:	25					
In each of the communities, the average number of monitors participating is:	3					12
Total Number of Activity #3 Workshops in Health Sector #2:		**3**	1	6	12	36
Cost of the Workshops in Health Sector #2:		**81,249**				

Table 8
The Cost of Promotion and Prevention Training Activities (#1 and #3) Involved in Implementing the AIN-C Program: Year One

		Cost per Activity	Number of Sectors	Number of Centers	Number of Communities	Number of Monitors
In Sector #3 =>			1			
Activity 3: Training Health Center and Community Level Personnel--Preventive Component		**27,083**				
The number of health centers participating in one workshop is:	2			2		
For each health center that is participating, the average number of communities participating is:	2				4	
In each of the communities participating, the average number of children participating is:	25					
In each of the communities, the average number of monitors participating is:	3					12
Activity 3: Training Health Center and Community Level Personnel--Preventive Component		**27,083**				
The number of health centers participating in one workshop is:	2			2		
For each health center that is participating, the average number of communities participating is:	2				4	
In each of the communities participating, the average number of children participating is:	25					
In each of the communities, the average number of monitors participating is:	3					12
Activity 3: Training Health Center and Community Level Personnel--Preventive Component		**27,083**				
The number of health centers participating in one workshop is:	2			2		
For each health center that is participating, the average number of communities participating is:	2				4	
In each of the communities participating, the average number of children participating is:	25					
In each of the communities, the average number of monitors participating is:	3					12
Total Number of Activity #3 Workshops in Health Sector #3:		**3**	1	6	12	36
Cost of the Workshops in Health Sector #3:		**81,249**				
In Sector #4 =>			1			
Activity 3: Training Health Center and Community Level Personnel--Preventive Component		**27,083**				
The number of health centers participating in one workshop is:	2			2		
For each health center that is participating, the average number of communities participating is:	2				4	
In each of the communities participating, the average number of children participating is:	25					
In each of the communities, the average number of monitors participating is:	3					12
Activity 3: Training Health Center and Community Level Personnel--Preventive Component		**27,083**				
The number of health centers participating in one workshop is:	2			2		
For each health center that is participating, the average number of communities participating is:	2				4	
In each of the communities participating, the average number of children participating is:	25					
In each of the communities, the average number of monitors participating is:	3					12
Activity 3: Training Health Center and Community Level Personnel--Preventive Component		**27,083**				
The number of health centers participating in one workshop is:	2			2		
For each health center that is participating, the average number of communities participating is:	2				4	
In each of the communities participating, the average number of children participating is:	25					
In each of the communities, the average number of monitors participating is:	3					12
Total Number of Activity #3 Workshops in Health Sector #4:		**3**	1	6	12	36
Cost of the Workshops in Health Sector #4:		**81,249**				

Table 8
The Cost of Promotion and Prevention Training Activities (#1 and #3) Involved in Implementing the AIN-C Program: Year One

		Cost per Activity	Number of Sectors	Number of Centers	Number of Communities	Number of Monitors
In Sector #5 =>			1			
Activity 3: Training Health Center and Community Level Personnel--Preventive Component		**27,083**				
The number of health centers participating in one workshop is:	2			2		
For each health center that is participating, the average number of communities participating is:	2				4	
In each of the communities participating, the average number of children participating is:	25					
In each of the communities, the average number of monitors participating is:	3					12
Activity 3: Training Health Center and Community Level Personnel--Preventive Component		**27,083**				
The number of health centers participating in one workshop is:	2			2		
For each health center that is participating, the average number of communities participating is:	2				4	
In each of the communities participating, the average number of children participating is:	25					
In each of the communities, the average number of monitors participating is:	3					12
Activity 3: Training Health Center and Community Level Personnel--Preventive Component		**27,083**				
The number of health centers participating in one workshop is:	2			2		
For each health center that is participating, the average number of communities participating is:	2				4	
In each of the communities participating, the average number of children participating is:	25					
In each of the communities, the average number of monitors participating is:	3					12
Total Number of Activity #3 Workshops in Health Sector #5:		**3**	1	6	12	36
Cost of the Workshops in Health Sector #5:		**81,249**				
Total Number of Activity #3 Workshops in the Health Area:		**15**				
Cost of the Activity #3 Workshops in the Health Area:		**406,243**				
Cost of all of the Workshops in the Health Area--Activities #1 y #3:		**449,231**	5	30	60	180

1 Activity 1: Facilitator Training in Management of the Sick Child
15 Activity 4: Training of Health Center and Community Personnel--Management of the Sick Child

Table 9
The Cost of Curative Care Training Activities (#4 and #5) Involved in Implementing the AIN-C Program: Year Two

		Cost per Activity	Number of Sectors	Number of Centers	Number of Communities	Number of Children	Number of Monitors
Year 2							
Activity #4: Facilitator Training in the Management of the Sick Child => 2 Health Areas participating		**36,753**					
In each Health Area =>							
In Sector #1 =>			1				
Activity 5: Training of Health Center and Community Personnel in the Management of the Sick Child		**18,954**					
The number of health centers participatingin the workshop is:	2			2			
For each health center that is participating, the average number of communities participating is:	2				4		
In each of the participating communities, the average number of children participating is:	25					100	
In each of the communities, the average number of monitors participating is:	3						12
Activity 5: Training of Health Center and Community Personnel in the Management of the Sick Child		**18,954**					
The number of health centers participatingin the workshop is:	2			2			
For each health center that is participating, the average number of communities participating is:	2				4		
In each of the participating communities, the average number of children participating is:	25					100	
In each of the communities, the average number of monitors participating is:	3						12
Activity 5: Training of Health Center and Community Personnel in the Management of the Sick Child		**18,954**					
The number of health centers participatingin the workshop is:	2			2			
For each health center that is participating, the average number of communities participating is:	2				4		
In each of the participating communities, the average number of children participating is:	25					100	
In each of the communities, the average number of monitors participating is:	3						12
Total Number of Activity #5 Workshops in Health Sector #1:		**3**	1	6	12	300	36
Cost of the Workshops in Health Sector #1:		**56,861**					
In Sector #2 =>			1				
Activity 5: Training of Health Center and Community Personnel in the Management of the Sick Child		**18,954**					
The number of health centers participatingin the workshop is:	2			2			
For each health center that is participating, the average number of communities participating is:	2				4		
In each of the participating communities, the average number of children participating is:	25					100	
In each of the communities, the average number of monitors participating is:	3						12
Activity 5: Training of Health Center and Community Personnel in the Management of the Sick Child		**18,954**					
The number of health centers participatingin the workshop is:	2			2			
For each health center that is participating, the average number of communities participating is:	2				4		
In each of the participating communities, the average number of children participating is:	25					100	
In each of the communities, the average number of monitors participating is:	3						12
Activity 5: Training of Health Center and Community Personnel in the Management of the Sick Child		**18,954**					
The number of health centers participatingin the workshop is:	2			2			
For each health center that is participating, the average number of communities participating is:	2				4		
In each of the participating communities, the average number of children participating is:	25					100	
In each of the communities, the average number of monitors participating is:	3						12
Total Number of Activity #5 Workshops in Health Sector #2:		**3**	1	6	12	300	36
Cost of the Workshops in Health Sector #2:		**56,861**					

Table 9
The Cost of Curative Care Training Activities (#4 and #5) Involved in Implementing the AIN-C Program: Year Two

		Cost per Activity	Number of Sectors	Number of Centers	Number of Communities	Number of Children	Number of Monitors
In Sector #3 =>			1				
Activity 5: Training of Health Center and Community Personnel in the Management of the Sick Child		**18,954**					
The number of health centers participatingin the workshop is:	2			2			
For each health center that is participating, the average number of communities participating is:	2				4		
In each of the participating communities, the average number of children participating is:	25					100	
In each of the communities, the average number of monitors participating is:	3						12
Activity 5: Training of Health Center and Community Personnel in the Management of the Sick Child		**18,954**					
The number of health centers participatingin the workshop is:	2			2			
For each health center that is participating, the average number of communities participating is:	2				4		
In each of the participating communities, the average number of children participating is:	25					100	
In each of the communities, the average number of monitors participating is:	3						12
Activity 5: Training of Health Center and Community Personnel in the Management of the Sick Child		**18,954**					
The number of health centers participatingin the workshop is:	2			2			
For each health center that is participating, the average number of communities participating is:	2				4		
In each of the participating communities, the average number of children participating is:	25					100	
In each of the communities, the average number of monitors participating is:	3						12
Total Number of Activity #5 Workshops in Health Sector #3:		**3**	1	6	12	300	36
Cost of the Workshops in Health Sector #3:		**56,861**					
In Sector #4 =>			1				
Activity 5: Training of Health Center and Community Personnel in the Management of the Sick Child		**18,954**					
The number of health centers participatingin the workshop is:	2			2			
For each health center that is participating, the average number of communities participating is:	2				4		
In each of the participating communities, the average number of children participating is:	25					100	
In each of the communities, the average number of monitors participating is:	3						12
Activity 5: Training of Health Center and Community Personnel in the Management of the Sick Child		**18,954**					
The number of health centers participatingin the workshop is:	2			2			
For each health center that is participating, the average number of communities participating is:	2				4		
In each of the participating communities, the average number of children participating is:	25					100	
In each of the communities, the average number of monitors participating is:	3						12
Activity 5: Training of Health Center and Community Personnel in the Management of the Sick Child		**18,954**					
The number of health centers participatingin the workshop is:	2			2			
For each health center that is participating, the average number of communities participating is:	2				4		
In each of the participating communities, the average number of children participating is:	25					100	
In each of the communities, the average number of monitors participating is:	3						12
Total Number of Activity #5 Workshops in Health Sector #4:		**3**	1	6	12	300	36
Cost of the Workshops in Health Sector #4:		**56,861**					

Table 9

The Cost of Curative Care Training Activities (#4 and #5) Involved in Implementing the AIN-C Program: Year Two

		Cost per Activity	Number of Sectors	Number of Centers	Number of Communities	Number of Children	Number of Monitors
In Sector #5 =>							
			1				
Activity 5: Training of Health Center and Community Personnel in the Management of the Sick Child		**18,954**					
The number of health centers participatingin the workshop is:	2			2			
For each health center that is participating, the average number of communities participating is:	2				4		
In each of the participating communities, the average number of children participating is:	25					100	
In each of the communities, the average number of monitors participating is:	3						12
Activity 5: Training of Health Center and Community Personnel in the Management of the Sick Child		**18,954**					
The number of health centers participatingin the workshop is:	2			2			
For each health center that is participating, the average number of communities participating is:	2				4		
In each of the participating communities, the average number of children participating is:	25					100	
In each of the communities, the average number of monitors participating is:	3						12
Activity 5: Training of Health Center and Community Personnel in the Management of the Sick Child		**18,954**					
The number of health centers participatingin the workshop is:	2			2			
For each health center that is participating, the average number of communities participating is:	2				4		
In each of the participating communities, the average number of children participating is:	25					100	
In each of the communities, the average number of monitors participating is:	3						12
Total Number of Activity #5 Workshops in Health Sector #5:		**3**	**1**	**6**	**12**	**300**	**36**
Cost of the Workshops in Health Sector #5:		**56,861**					
Total Number of Activity #5 Workshops in the Health Area:		**15**	**5**	**30**	**60**	**1500**	**180**
Cost of the Activity #5 Workshops in the Health Area:		**284,307**					
Cost of the All Activity #4 and #5 Workshops in the Health Area:		**302,683**					

1 Activity 5: Facilitator Training in Management of the Sick Child
15 Activity 5: Health Center and Community Training in Management of the Sick Child

To facilitate explaining the structure and costs of the Program as it is phased-in over space and time, it is useful to refer to the regular, routine activities that are involved in each of the years of the phasing-in cycle, as Year 1, Year 2 and Year 3. As already noted, for the Program to be "fully implemented" it must be phased into 10 of the communities of each health center. Thus, for the Program to fully implemented in an "entire" health area means 10 communities per health center will have AIN-C Programs, and bringing all of these communities into the Program at a rate of two per health center per year, will require 6 years. Table 10 shows the full complement of Year 1 activities. The distinguishing characteristics or activities of Year 1 are the first Facilitator training, the prevention/promotion training, along with the community baseline study and the community-facility level prevention/promotion training. The first pair of communities of each health center in which the Program is implemented (along with their six monitors) will be referred to as the Program's first cohort. The second pair of communities of each health center in which the Program is implemented will be referred to as the second cohort, and so on. The fully-implemented AIN-C Program will have five cohorts.

In the second year of the program, the first cohort receives its curative care training and enters what will be referred to as Year 2 activities of the Program. (The complete set of Year 2 activities is presented in Table 11.) At the same time, a new cohort, cohort #2, is introduced for the first time into the Program and receives its prevention/promotion training. The second year of implementing the Program is Year 1 for the second cohort and Year 2 for the first cohort. Similarly, the third year of implementing AIN-C is Year 3 for cohort #1, Year 2 for cohort #2 and Year 1 for cohort #3. The fourth year of implementing AIN-C is Year 4 for cohort #1, Year 3 for cohort #2, Year 2 for cohort #3 and Year 1 for cohort #4. The fifth year of implementing AIN-C is Year 5 for cohort #1, Year 4 for cohort #2, Year 3 for cohort #3, Year 2 for cohort #4 and Year 1 for cohort #5. Although all five cohorts are participating in the Program five years after implementation has begun, to fully implement the Program in any given community requires two years because the curative care training does not occur until the second year of the program. Beginning with a cohort's third year in the program, the cohort has entered the long-term permanent program structure, and costs thereafter become constant at their long-term annual recurrent cost level. The full set of Year 3 (and all subsequent years') activities is presented in Table 12.

Table 10
Total Cost of Implementing the AIN-C Program in One Health Area by Cohort and Activity
The First Year of the Program

	Number of Times per Year	Cost per Community	Number of Communities per Health Center	Cost per Health Center	Number of Centers per Sector	Cost per Sector	Number of Sectors per Area	Cost per Area
First Year of the Program								
Activity 1: Institutional Level Training of Facilitators-Preventive Component => 2 Health Areas participating	1 / Health Area	143	2	287	6	8,598	5	42,989
Activity 2: Baseline Study-Training of the Health Center Personnel already trained in the Preventive Component (including Meeting with the Community and Selection of the Monitors)	60 / area = 1 / community	4,555	2	9,129	6	54,775	5	273,875
Activity 3: Training Health Center and Community Level Personnel-Preventive Component	15 / area	6,771	2	13,541	6	81,249	5	406,243
Activity 6: Monthly AIN-C Meetings	Per Community:							
6a. Monthly AIN-C Meeting: With Follow-up by the Nurse Auxiliary and the Health Sector Nurse	1	1,083	2	2,167	6	13,001	5	65,004
6b. Monthly AIN-C Meeting: With Follow-up by the Health Center's Nurse Auxiliary (alone)	9	260	2	4,675	6	28,050	5	140,249
6c. Monthly AIN-C Meeting: Without follow-up	2	0	2	0	6	0	5	0
Activity 7: Supervision by Health Area Staff (Each pro-rated at 25%)								
7a. Supervision by the Area: 2 visits annually to each Health Sector (only)	2	131	2	263	6	1,577	5	7,885
7b. Supervision by the Area: 1 visit annually to each Sector then-with the Sector Nurse-to a Health Center	1	86	2	173	6	1037	5	5,187
7c. Supervision by the Area: 1 visit annually to each health center (alone)	1	366	2	732	6	4,389	5	21,946
Activity 8: Supervision by the Sector Nurse: 3 visits annually to the Health Center (only) (Pro-rated at 33%)	3	486	2	971	6	6,827	5	29,135
Activity 9: Monthly Meetings in the Health Center with other volunteers and resupply of the Monitors	Per Health Center:							
9a. The first cohort of 2 health centers and their 4 communities	12	350	2	8,399	6	50,397	5	251,984
9b. All subsequent cohorts (each adding two communities, 6 monitors per health center)	12	113	2	2,719	6	16,317	5	81,584
Activity 10: Meetings with the Community once every 4 months	Per Community:							
10a. The first	1	901	2	1,802	6	10,810	5	54,048
10b. The second	1	59	2	119	6	712	5	3,560
10c. Those subsequent to the second	1	0	2	0	6	0	5	0
Activity 11: The Other Monthly Activities of the Monitors (home visits and curative care treatments)	12 / community	0	2	0	6	0	5	0
Activity 12a: Incentives that Each Community's Monitors Receive--The First Year of the Program	3 Per community	729	2	1,458	6	8,750	5	43,749
Total Annual Costs--First Year of Cohort #1:		**15,930**		**43,715**		**269,170**		**1,345,852**
Total Annual Costs--First Year of Cohorts #2-#5*:		**14,481**		**35,610**		**213,663**		**1,068,313**

*How the Year 1 costs of cohorts #2 through #5 differ from Cohort #1's:

Cohort #1 includes: (1) the cost of activity #1, which is incurred only once for the entire area. For cohorts subsequent to the first one, these costs do not vary. They become fixed costs.
(2) the cost of activity #7, which is incurred only once for the entire area. For cohorts subsequent to the first one, these costs do not vary. They become fixed costs.
(3) the cost of activity #8, which is incurred only once by each sector for each of its six health centers. For cohorts subsequent to the first one, these costs do not vary. They become fixed costs.
(4) the cost of activity #9a, which is incurred only once by each health center. For cohorts subsequent to the first one, the costs of health center staff remain fixed.

However, subsequent to the first monthly health center volunteers meeting, the introduction of AIN-C in a new cohort (i.e., in new pairs of communities of each health center each year) requires an additional activity #10b

Table 11
Total Cost of Implementing the AIN-C Program in One Health Area by Cohort and Activity: In the Second Year of the Program

	Number of Times per Year	Cost per Community	Number of Communities per Health Center	Cost per Health Center	Number of Centers per Sector	Cost per Sector	Number of Sectors per Area	Cost per Area
Second Year of the Program								
Activity 4: Institutional Level Training of Facilitators-Curative Component	1 / Health Area	306	2	613	6	3,675	5	18,377
Activity 5: Training Health Center and Community Level Personnel-Curative Component	15 / Health Area	4,738	2	9,477	6	56,861	5	284,307
Activity 6: Monthly AIN-C Meetings	Per Community:							
6b. Monthly AIN-C Meeting: With Follow-up by the Health Center's Nurse Auxiliary (alone)	6	260	2	3,117	6	18,700	5	93,500
6c. Monthly AIN-C Meeting: Without follow-up	6	0	2	0	6	0	5	0
Activity 7: Supervision by Health Area Staff (Each pro-rated at 25%)								
7a. Supervision by the Area: 2 visits annually to each Health Sector (only)	2	131	2	263	6	1,577	5	7,885
7b. Supervision by the Area: 1 visit annually to each Sector then-with the Sector Nurse-to a Health Center	1	86	2	173	6	1037	5	5,187
7c. Supervision by the Area: 1 visit annually to each health center (alone)	1	366	2	732	6	4,389	5	21,946
Activity 8: Supervision by the Sector Nurse: 3 visits annually to the Health Center (only) (Pro-rated at 33%)	3	486	2	971	6	5,827	5	29,135
Activity 9: Monthly Meetings in the Health Center with all volunteers & resupply of the Monitors	Per Health Center:							
9a. Two health centers and their first two cohorts and 8 communities	12	350	2	8,399	6	50,397	5	251,984
9b. All subsequent cohorts (each adding two communities, 6 monitors per health center)	12	113	2	2,719	6	16,317	5	81,584
Activity 10: Meetings with the Community once every 4 months	Per Community:							
10c. Those subsequent to the Second	2	0	2	0	6	0	5	0
Activity 11: The Other Monthly Activities of the Monitors (home visits and curative care treatments)	12 / Community	0	2	0	6	0	5	0
Activity 12b: Incentives that Each Community's Monitors Receive--After the First Year of the Program	Per Community	480	2	960	6	5,762	5	28,809
Total Annual Costs--Second Year of Cohort #1:		**7,204**		**24,704**		**148,225**		**741,127**
Total Annual Costs--Second Year of Cohorts #2-#5*:		**5,592**		**16,273**		**97,640**		**488,200**

*How the Year 2 costs of cohorts #2 through #5 differ from Cohort #1's:

Cohort #1 includes: (1) the cost of activity #4, which is incurred only once for the entire area. For cohorts subsequent to the first one, these costs do not vary. They become fixed costs.
(2) the cost of activity #7, which is incurred only once for the entire area. For cohorts subsequent to the first one, these costs do not vary. They become fixed costs.
(3) the cost of activity #8, which is incurred only once by each sector for each of its six health centers. For cohorts subsequent to the first one, these costs do not vary. They become fixed costs.
(4) the cost of activity #9a, which is incurred only once by each health center. For cohorts subsequent to the first one, the costs of health center staff remain fixed.

However, subsequent to the first monthly health center volunteers meeting, the introduction of AIN-C in a new cohort (i.e., in new pairs of communities of each health center each year) requires an additional activity #10b

Table 12
Total Cost of Implementing the AIN-C Program in One Health Area by Cohort and Activity: The Third and Subsequent Years in the Program

	Number of Times per Year	Cost per Community	Number of Communities per Health Center	Cost per Health Center	Number of Centers per Sector	Cost per Sector	Number of Sectors per Area	Cost per Area
Third and Subsequent Years of the Program								
Activity 6: Monthly AIN-C Meetings	Per Community:							
6c. Monthly AIN-C Meeting: With Follow-up by the Health Center's Nurse Auxiliary (alone)	6	260	2	3,117	6	18,700	5	93,500
6d. Monthly AIN-C Meeting: Without follow-up	6	0	2	0	6	0	5	0
Activity 7: Supervision by Health Area Staff (Each pro-rated at 25%)								
7a. Supervision by the Area: 2 visits annually to each Health Sector (only)	2	131	2	263	6	1,577	5	7,885
7b. Supervision by the Area: 1 visit annually to each Sector then-with the Sector Nurse-to a Health Center	1	86	2	173	6	1,037	5	5,187
7c. Supervision by the Area: 1 visit annually to each health center (alone)	1	366	2	732	6	4,389	5	21,946
Activity 8: Supervision by the Sector Nurse: 3 visits annually to the Health Center (only) (Pro-rated at 33%)	3	486	2	971	6	5,827	5	29,135
Activity 9: Monthly Meetings in the Health Center with all volunteers & resupply of the Monitors	Per Health Center:							
9a. Two health centers and their first three cohorts of 2 health centers and their 4 communities	12	350	2	8,399	6	50,397	5	251,984
9b. All subsequent cohorts (each adding two communities, 6 monitors per health center)	12	113	2	2,719	6	16,317	5	81,584
Activity 10: Meetings with the Community once every 4 months	Per Community:							
10c. Those subsequent to the Second	2	0	2	0	6	0	5	0
Activity 11: The Other Monthly Activities of the Monitors (home visits and curative care treatments)	12 / Community	0	2	0	6	0	5	0
Activity 12b: Incentives that Each Community's Monitors Receive--After the First Year of the Program	Per Community	480	2	960	6	5,762	5	28,809
Total Annual Costs--Third and Subsequent Years of Cohort #1:		**2,272**		**17,334**		**104,006**		**438,444**
Total Annual Costs--Third and Subsequent Years of Cohorts #2-#5*:		**966**		**9,516**		**57,095**		**203,893**

*How the Year 3 costs of cohorts #2 through #5 differ from Cohort #1's:
Cohort #1 includes: (2) the cost of activity #7, which is incurred only once for the entire area. For cohorts subsequent to the first one, these costs do not vary. They become fixed costs.
(3) the cost of activity #6, which is incurred only once by each sector for each of its six health centers. For cohorts subsequent to the first one, these costs do not vary. They become fixed costs.
(4) the cost of activity #9a, which is incurred only once by each health center. For cohorts subsequent to the first one, the costs of health center staff remain fixed.
However, subsequent to the first monthly health center volunteers meeting, the introduction of AIN-C in a new cohort (i.e., in new pairs of communities of each health center each year) requires an additional activity #10b

With this nomenclature in hand, the discussion turns now to a more detailed consideration of the structure of Tables 10-12.

(1) Year 1 Costs

Table 10 presents the total cost of implementing the AIN-C Program in one health area in the first year of the Program. The costs are presented for each activity and sub-activity. The Table incorporates the costs of activities #1 and #4 (already discussed and quantified in Table 8), along with all of the other activities of the Program. In the first year of the Program, only two of the Program's 12 activities—the curative care trainings—are not undertaken. Table 10 presents the frequency of each activity in the first year, along with its total costs per community, per health center, per sector and per health area.

The total cost of the Program in Year 1 for the first cohort is 1,345,852 lempiras. For subsequent cohorts, the Year 1 costs are less either because the activities are undertaken only once in the entire area (as is the case with activity #1), or because the costs that are incurred by the first cohort become fixed for subsequent cohorts (as is the case for activities #7, #8 and the health facility staff-time component of activity #9a). Activity #1, the Facilitator or TOT, is conducted only once for every two health areas. Thus its expenses are incurred only once per health area, and all of these costs, nearly 43,000 lempiras, are assigned to the first cohort.

In the case of activity #7, once the AIN-C Program is started in a given health area the supervisory staff from the health area office visit each health sector to discuss it, and other programs. The health area staff's supervision is done primarily at the health sector level, and to a lesser extent the health center level. They do not supervise the community level. Thus, it is not surprising that health area supervisors report that they spend roughly the same amount of time reviewing each health sector's AIN-C Program-related activities, regardless of how many communities are participating in the program.

The activity #8 supervision by health sector nurse supervisors is performed at the health center level (as distinct from activity #6a or #6b, in which the health sector nurse supervision is at the community). As with the health area supervision of the health sector, so too here, with the health sector supervision of the health center, supervisory time at the health center is not affected by the introduction of the AIN-C Program into new communities. Thus, the activity #8 costs do not change when AIN-C is introduced into additional communities.

The same is also true of activity #9a. With the advent of the AIN-C Program among a health center's activities, the first cohort of AIN-C communities is brought into the Program and the health center begins to devote roughly half of the monthly meeting of volunteers to AIN-C-related issues. The amount of time spent on AIN-C in these meetings is reported not to change as the number of communities implementing AIN-C in the same health center's other communities increases. Thus the costs due to the health center staff spending time on AIN-C-related issues during the monthly volunteers meetings do not change with the introduction of the program into new (post-cohort #1) communities, although the cost of re-supplying monitors does. The cost of re-supplying monitors increases in direct proportion to the number of new monitors entering the program. Thus the costs of the monthly meetings of volunteers is equal to activity #9a for the first cohort, and activity #9b (which includes only the re-supply costs) for all subsequent cohorts entering into the program.

As a result of these cost differences, the Year 1 costs of cohorts 2 through 5 are more than 277,500 lempiras, or 21 percent, less than those of the first cohort. Whereas the first cohort's Year 1 costs are 1,345,852 lempiras, those of the subsequent cohorts are each 1,068,313 lempiras.

(2) Year 2 Costs

Table 11 presents the total Year 2 cost of implementing the AIN-C Program in one health area by activity. It includes the cost of activities #4 and #5 presented earlier in Table 9, along with all of the other activities of the Program. In Year 2, with the exception of the first three activities (the two prevention/promotion trainings and the community baseline study), all of the other 12 activities involved in the Program are undertaken. Year 2 total costs are less than half of Year 1 costs.

Just as was the case in Year 1, so too in Year 2, the total cost of the Program for the first cohort is considerably greater than it is for subsequent cohorts, and for the same reasons. In Year 2, the first cohort's costs include all of the costs of the Facilitator Training session, just as they did in Year 1 (although in Year 2 the content of this training session is curative care—activity #4, whereas in Year 1 it is prevention/promotion—activity #1). The health area's share of these costs in Year 2 is 18,377, all of which are assigned to the first cohort.

Cohorts 2 through 5 also have lower costs in Year 2 because the costs of activities #7 and #8 that are incurred by the first cohort become fixed for subsequent cohorts (for reasons explained in the previous section). Similarly, the health facility staff-time component of activity #9a becomes fixed after the first cohort and the re-supply activity (#9b) alone, replaces the re-supply plus staff-time activity (#9a).

The Year 2 cost differences between the first and subsequent cohorts is proportionately greater than in Year 1. Cohorts 2 through 5 costs are nearly 253,000 lempiras, or 34 percent, less than those of the first cohort. Whereas the first cohort's Year 2 costs are 741,127 lempiras, those of the subsequent cohorts are 488,200 lempiras.

(3) Costs of Year 3 and Thereafter

The Table 12 presents the costs of Year 3 and all subsequent years in implementing AIN-C by activity. The activities contained in Table 12 are all annually recurrent activities required to maintain the Program as it is currently structured and operated. As in Year 1 and Year 2, the costs of these activities vary between cohort #1 and all subsequent cohorts. The costs of the first and subsequent cohorts varies due to the differences in the costs of same three activities (#7, #8 and #9) vary, and the causes of these cost variations are the same as they were in Years 1 and 2, and will not be reiterated here.

The Year 3 costs of cohorts 2 through 5 are about 235,000 lempiras, less than those of the first cohort. The first cohort's Year 3 costs are 438,444 lempiras, more than double those of the subsequent cohorts, 203,893 lempiras. Thus, each year of the program, the differences between the first and subsequent cohorts' costs becomes proportionately greater. This suggests that if it is found necessary or desirable to expand the program beyond the average of 10 communities per health center, that doing so will be less costly per additional community and per additional child.

Now we are finally ready to pull together the various component cost estimates to develop an estimate of the total cost of implementing the AIN-C Program in one health area. The results are presented in Table 13. The Table is structured in such a manner as to make the derivation of the total program cost estimates as transparent as possible, by breaking-down the costs by year and by cohort. As Table 13 shows, the

total costs of introducing the AIN-C Program in one health area requires six years and costs 11.3 million lempiras (US$681,136). The program completes its start-up phase at the start of program Year 7, when its annual costs—which will be its long-term, annual recurrent costs—are 1,254,016 lempiras (approximately US$76,000)

Table 13
Estimating the Total Costs of Introducing the AIN-C Program in One Health Area
The Base Scenario

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Cohort #1*	1,345,852	741,127	438,444	438,444	438,444	438,444	438,444
Cohort #2		1,068,313	488,200	203,893	203,893	203,893	203,893
Cohort #3			1,068,313	488,200	203,893	203,893	203,893
Cohort #4				1,068,313	488,200	203,893	203,893
Cohort #5					1,068,313	488,200	203,893
	1,345,852	1,809,440	1,994,956	2,198,849	2,402,742	1,538,323	1,254,016

Cumulative Total Costs

Year	Amount
Year 1	1,345,852
Year 2	3,155,292
Year 3	5,150,249
Year 4	7,349,098
Year 5	9,751,840
Year 6	11,290,163

Fully implementing the AIN-C Program in one Health Area requires 6 years because of the way in the program is phased-in, at a cost of: 11,290,163 Lempiras

Year 7 is the first year in which the program has been fully implemented throughout the Area, where "fully implemented" is defined as the program having a coverage of 10 communities (all of the strata 4 and 5; i.e., poorest communities) of each health center in each health sector. AIN-C will then have achieved coverage of 30 health facilities and 300 communities in the health area. The program arrives at this level of coverage in year 5, but costs continue increasing throughout year 6 due to curative care training workshops. Starting with Year 7, trainings have been completed and thereafter the program's costs are comprised of only maintenance costs, which remain constant, year after year.

*Each cohort consists of 5 sectors, 30 facilities and 60 "new" communities.

B. AVERAGE ANNUAL TOTAL COST PER CHILD AND AVERAGE TOTAL COST PER CHILD-YEAR[25]

(1) Distinguishing the Number of Children Participating per Year and the Number of Child-Years of Participation

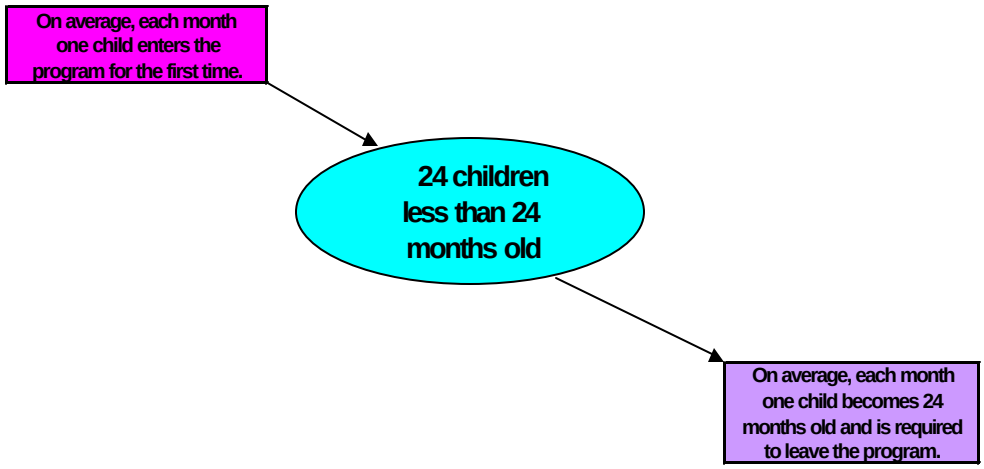
The AIN-C Program personnel report that the activities involved in conducting the community census and base-line create (via word-of-mouth) community expectations and arouse the mothers' curiosity and interest in the program. As a result, there is generally 100 percent participation of eligible children in the program in its initial month in operation. After that, the general experience has been that the participation rate slips somewhat, but remains high. The BASICS mid-term evaluation, for instance, found that 92 percent of children under two in the communities that were surveyed were participating in AIN-C (BASICS II, 2002, p. 1).

As Figure 4 shows, each month newborns and other young children are entering the program, at the same time that other children reach their second birthday, become ineligible for, and are phased-out of the program. Table 14 shows the month-by-month dynamics of new children entering and children reaching the age of 24 months and exiting the program. In Table 14 it is assumed for purposes of elucidation that the number of children in the program at any time is 25,

[25] There are two important points that merit explicit discussion, and that need to be borne in mind in considering the average cost per child calculations. First, throughout this paper, per child cost calculations include only the number of children under two who are actually participating in the program. It is important to note that these are ***not*** the costs of the program per child in the general population. (Using the general population-based denominator would, of course, produce lower average costs per child.) Second, the per child cost calculations do not include the under five year olds, despite the fact that the curative care training sessions and the monitors' curative care advising in the community both target this larger group. Incorporating the under fives could be done by making a number of assumptions and dividing costs and populations across the different activities, into the two population groupings—under twos and under fives—and re-estimating the costs. While this is more accurate, it is also more cumbersome because it is no longer possible to discuss the average cost per child. Since the program covers two populations with different packages of services it has two denominators, rather than just the under two population. Therefore, for ease of exposition, throughout the discussion the average cost per child will be calculated per child under two years of age, which will actually overstate costs. Section 4.E. contains a more detailed, precise and disaggregated analysis of each of these denominators.

Figure 4
The Dynamics of Participation in the AIN-C Program

(Assumes that there are 25 children in the average community and 24 of them are participating in the Program)



and, to facilitate taking a closer look at the dynamics of the program, we make the further simplifying assumption that the 25 children in the program are perfectly evenly distributed across the age eligibility categories; i.e., that one child is a newborn (0 months old), one child is one month old, one child is two months old, one child is three months old…. one child is 23 months old) and that one child is born each month. This provides us with a simple (if unrealistic) tool for understanding the dynamics of which children entering and exiting the program. This is important for purposes of calculating the number of children who participate in the program and distinguishing it from the number of children-months (or children-years) of participation in the program, both of which are necessary to accurately calculate in order to accurately compute the cost per child of the AIN-C Program.

By virtue of the fact that children are entering and leaving the program each month, the number of children in the program in one community in a given year will not be 25, but substantially more. As can be seen in the lower portion of Table 14-A, given our assumptions, during any given month there will be 25 children in the program. Over the course of the year, there will be a total of 37 children participating in the program in a given community, and the average child will be in the program for 8.1 months. Each year, the program will have 300 children-months of participation in one community.

If one is interested in the number of children who participate in the program in a health area during any given calendar year, regardless of the duration of their participation during that period, then one would be interested in the data presented in Table 14-B. This would be useful

Table 14
Community-Level Dynamics of Participation in the AIN-C Program

Number of children per community = 25

TABLE 14-A: Number of Children Participating in One Community by Month

Annual Dynamics

Month	Entering	Exiting	Continuing	Total #
1	1	-1	25	25
2	1	-1	25	25
3	1	-1	25	25
4	1	-1	25	25
5	1	-1	25	25
6	1	-1	25	25
7	1	-1	25	25
8	1	-1	25	25
9	1	-1	25	25
10	1	-1	25	25
11	1	-1	25	25
12	1	-1	25	25
Annually:	12	-12	300	300

Number of children-months: 300
Number of children-years: 25
Number of children: 37
Avg. number of months per child: 8.1

TABLE 14-B: Number of Children Participating in the Health Area

Number of Children per Area	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Cohort #1	2,220	2,220	2,220	2,220	2,220	2,220	2,220
Cohort #2		2,220	2,220	2,220	2,220	2,220	2,220
Cohort #3		2,220	2,220	2,220	2,220	2,220	2,220
Cohort #4		2,220	2,220	2,220	2,220	2,220	2,220
Cohort #5		2,220	2,220	2,220	2,220	2,220	2,220
Health Area Total:	**2,220**	**11,100**	**11,100**	**11,100**	**11,100**	**11,100**	**11,100**

TABLE 14-C: Number of Children-Years-of-Participation in the Health Area

Children-Months Per Health Area	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Cohort #1	1,500	1,500	1,500	1,500	1,500	1,500	1,500
Cohort #2		1,500	1,500	1,500	1,500	1,500	1,500
Cohort #3		1,500	1,500	1,500	1,500	1,500	1,500
Cohort #4		1,500	1,500	1,500	1,500	1,500	1,500
Cohort #5		1,500	1,500	1,500	1,500	1,500	1,500
Health Area Total:	**1,500**	**7,500**	**7,500**	**7,500**	**7,500**	**7,500**	**7,500**

data—for example, for program planning and budgeting purposes—to estimate the Program's cost per child participant.

Alternatively, one may be interested in both the total number of children participating in a health area and the duration of their participation in the Program. A measure that would provide both of these dimensions of program participation would be the number of child-months-of-participation or child-years-of-participation. In that case, one would be more interested in the data presented in Table 14-C. This data would be useful—for example, if we had data on the impact or effectiveness of the program, given that the child participates in the program for a given number of months—to estimate the cost-effectiveness of the program.

Each year, our hypothetical community program has 300 children-months of participation or 25 (= 300 /12) children-years of program participation. This cumbersome method of taking into account the flow of participants through the program may seem unnecessarily complex and pedantic. However, as may be seen by comparing Tables 14-B and 14-C, when estimating the costs per child over the six-year phase-in of the program to 60 new communities each year in a single health area, this difference becomes more than trivial. Over the six-year period, the number of children participating is 1.48 times greater than the number of children-years-of-participation. Clearly, in order to develop precise estimates of the per child cost of AIN-C, it is imperative that this distinction be recognized.

(2) Average Total Costs per Child and Per Child-Year-of-Participation

Table 15 presents the year-by-year annual and cumulative total costs, annual and cumulative total cost per child, annual and cumulative total cost per child-year-of-participation, as well as the average annual cost over the six-year phase-in period. The top portion of the table presents these results in lempiras of mid-2002, and the bottom portion presents these costs in U.S. dollars of mid-2002.

As the program is phased into a health area, its annual costs increase each year until the fifth year. In Year 6 they fall, owing to the ending of all Preventive Training (Activities #1 and #3) and all Baseline Studies (Activity #2). The following year, they fall again. This time due to the ending of all Curative Care Training (Activities #4 and #5). Starting in Year 7, all one-time (or start-up) activities have been completed. Thereafter, annual costs remain constant at their Year 7 level of 1,254,016 lempiras per year. In contrast, both the annual and the cumulative costs per child and per child-year-of-participation fall each year that the program is in operation throughout the period analyzed here.[26] This is due to the spreading of fixed costs over an increasing number of children (while the numerator is fixed, the denominator increases, resulting in smaller average total costs per child and per child-year-of-participation). These fixed costs include the supervisory costs discussed in reference to Tables 10, 11 and 12, as well as the fixed costs of the one-time training sessions and the one-time base-line study-related activities. These

[26] Other things being equal, the annual costs per child and annual cost per child-year-of-participation will remain constant at their Year 7 levels indefinitely, while the cumulative costs per child and the cumulative cost per child-year-of-participation will continually fall and will asymptotically approach their annual cost counterparts.

Table 15
Annual and Cumulative Costs of the AIN-C Program: Total, Per Child and Per Child-Year Costs The Base Scenario

A. In Lempiras of mid-2002

Year of the Program	Number of U2-Children Participating	Number of Children-Years of Participation	Annual Cost			Cumulative Cost		
			Total	Per Child	Per Child-Year	Total	Per Child	Per Child-Year
1	2,220	1,500	1,345,852	606	897	1,345,852	606	897
2	4,440	3,000	1,809,440	408	603	3,155,292	474	701
3	6,660	4,500	1,994,956	300	443	5,150,249	387	572
4	8,880	6,000	2,198,849	248	366	7,349,098	331	490
5	11,100	7,500	2,402,742	216	320	9,751,840	293	433
6	11,100	7,500	1,538,323	139	205	11,290,163	254	376
7	11,100	7,500	1,254,016	113	167	12,544,178	226	335
Average Annual Cost (1st 6 years)			1,881,694	319	473			

B. In US$ of mid-2002

Year of the Program	Number of U2-Children Participating	Number of Children-Years of Participation	Annual Cost			Cumulative Cost		
			Total	Per Child	Per Child-Year	Total	Per Child	Per Child-Year
1	2,220	1,500	81,222	37	54	81,222	37	54
2	4,440	7,500	109,200	25	36	190,422	29	42
3	6,660	7,500	120,396	18	27	310,818	23	35
4	8,880	7,500	132,701	15	22	443,518	20	30
5	11,100	7,500	145,006	13	19	588,524	18	26
6	11,100	7,500	92,838	8	12	681,362	15	23
7	11,100	7,500	75,680	7	10	757,042	14	20
Average Annual Cost (1st 6 years)			113,560	19	29			

Notes: "Per Child" calculations include all children participating in the program during the course of the year, regardless of the duration (i.e., the number of months) of any given child's participation. As shown in Table 8 and detailed in the text, if it is assumed that after the initial year of the program that there are 25 children in the program and they enter and--due to the age restrictions of the program--exit the program at a regular interval of roughly one child per month (or, more precisely, one every 1.042 months), the average child's length of participation in any given calendar year is 8.1 months.
A "Child-Year" consists of 12 months of program participation.

Exchange rate: 16.57 lempiras = US$1.00. Data source is www.bch.hn, "Indicadores Economicos" and "Tipo de Cambio", average of June 2002.

are relatively expensive undertakings that are undertaken early-on in the 6-year implementation cycle of the program, resulting in the front-loading of the program's costs.

The program's cumulative average total cost per child during the program's six-year phase-in period in a given health area is 256 lempiras (US$15.5). Its annual average total cost per child during this six-year phase-in period is 324 lempiras (US$19.6).

The AIN-C program's long-term, annual total cost per participating child is 113 lempiras (US$6.8).

Figures 5 through 8 present different views of the composition of costs of the AIN-C program in one health area of Honduras. Figures 5 and 6 show the composition of the total cumulative costs of implementing the program in one health area. Figure 5 shows the composition of these, broken down by type of program activity. It shows that the three start-up activities—preventive and curative training and base line study activities—account for 43 percent of the total cumulative cost of the program over its six-year phase-in period in one health area. Figure 6 shows the composition of the total cumulative costs by type of input. (See Annex 2 for tables containing the total direct costs of implementing the program in one health area by year, broken down by (1) type of input and year and (2) by activity and year and by program cohort. Annex 3 contains graphs presenting the year-by-year breakdown by activity.)

Figures 7 and 8 show the same two breakdowns of costs for the long-term, annual recurrent costs of the program in one health area. Figure 9 shows the composition of the long-term, annual recurrent cost per child.

Figure 5: Composition of the Total Costs of Implementing the AIN-C/Honduras Program in One Health Area, By Activity (Cumulative Costs of Years 1 through 6)

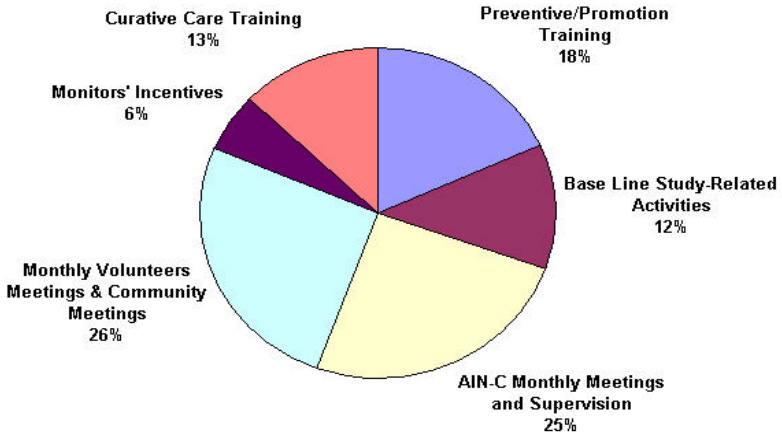


Figure 6: Composition of Total Costs of Implementing the AIN-C/Honduras Program in One Health Area, By Type of Input
(Cumulative Costs of Years 1 through 6)

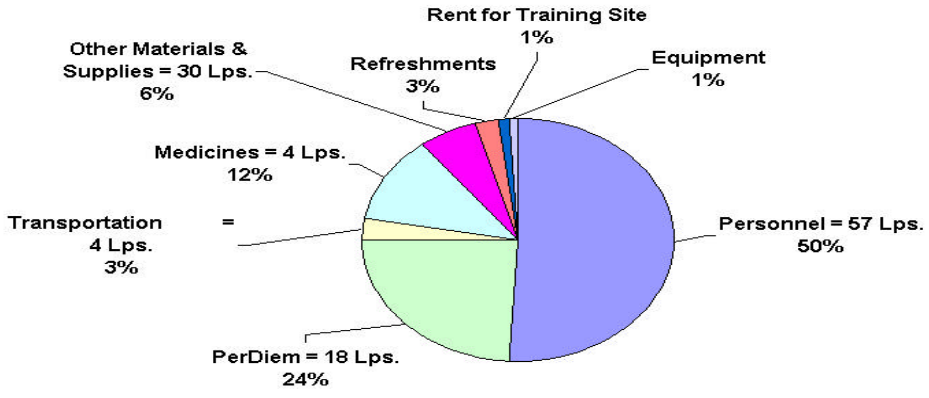


Figure 7: Composition of the Long-term, Annual Recurrent Costs of the AIN-C/Honduras Program in One Health Area, By Activity
(30 health facilities, 300 communities, 7500 children less than two)

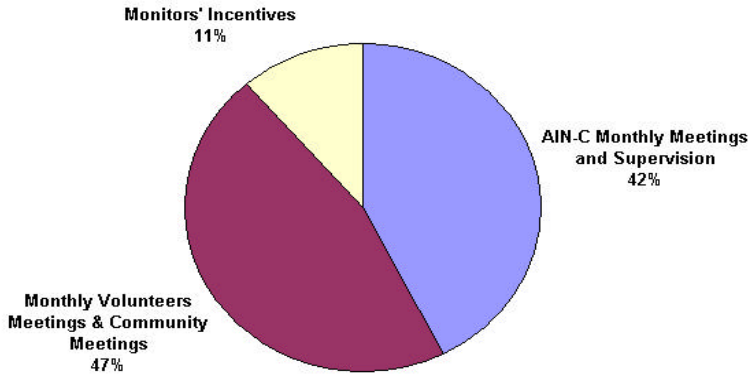


Figure 8: Composition of Long-term, Annual Recurrent Costs of the AIN-C/Honduras Program in One Health Area, By Typeof Input
(30 Health Centers, 300 Communities, 7,500 Children Less Than 2 Years Old)

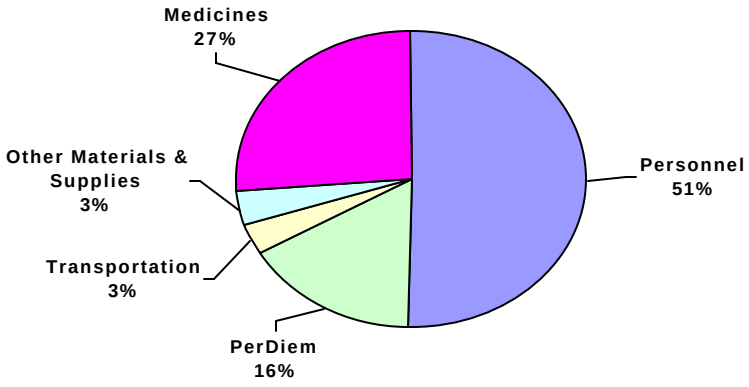
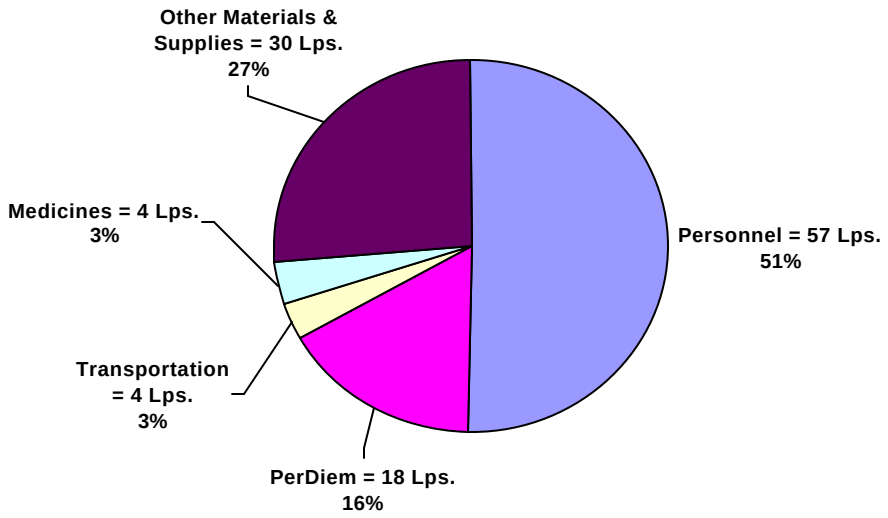


Figure 9: Composition of Long-term, Annual Recurrent Cost Per Child of the AIN-C Program (113 Lempiras per Child per Year)



C. THE INCREMENTAL BUDGET REQUIREMENTS OF AIN-C

For practical purposes, it is useful to identify the additional budgetary requirements that the MOH will need to receive from the Ministry of Finance if it is to implement and maintain the AIN-C program. As may have become evident in the description of the 12 activities involved in implementing the program, a significant proportion of the costs of AIN-C are fixed costs of the Ministry of Health. That is, they are costs that are already being incurred by the MOH and would continue to be incurred by the it, whether or not it implemented the AIN-C program. The most important of these fixed costs are the costs of MOH personnel who are already employed by the Ministry, but there are others, as well.

Supervision and follow-up are part of the regular activities of the health sector and the health center. The supervision and follow-up that these various MOH units conduct include, but are not limited to the AIN-C Program. However, these supervisory and follow-up activities would be conducted even if there were no AIN-C Program, and, where there is no AIN-C Program, these same levels of activities are still undertaken though, of course, a portion of their content is different. Thus, the cost to the MOH of these supervision and follow-up activities do not change with the introduction of AIN-C. They include all of the health area's supervisory costs and a portion of the health sector's supervisory costs. Activities #7 and #8, are therefore dropped from the analysis, while the health sector supervisory costs in which the health sector supervisory nurse is directly involved in community level AIN-C activities—activities #6a, 6b and #10a—are variable costs, and therefore retained in calculating the program's variable costs.

The program's cumulative average variable cost per child during the program's six-year phase-in period in a given health area is 136 lempiras (US$8.2). Its annual average variable cost per child during this six-year phase-in period is 164 lempiras (US$9.9).

The AIN-C program's long-term, annual incremental budget requirements are 66 lempiras (US$4.0) per participating child.

D. Cost per Capita

A commonly used financing metric in international health is the long-term, annual average cost of an intervention per capita. Even though many interventions—like AIN-C—are targeted to only a portion of the population, the average cost per capita is used to readily estimate and to compare the national financial requirements of interventions. The long-term, annual average cost per capita of the AIN-C Program of Honduras is 7.3 lempiras (US$0.44).

E. Disaggregating AIN-C Costs into Preventive and Curative Care Components

The AIN-C Program was initially designed to be a purely preventive intervention targeting children under two years of age. Over time, a curative care component using the Integrated Management of Childhood Illness (IMCI) protocols adapted for the community and targeting children under five was added. The preventive care component is (still) regarded by AIN-C Program personnel as the critical focus of the program. This characterization shaped the methodology used in estimating the curative care cost component of the Program: curative care is regarded as an add-on to the preventive program. The curative care cost estimates, therefore, should not be regarded independently from the preventive care component. More specifically, the curative care cost estimates should not be construed as providing estimates of the financing requirements of implementing a stand-alone, curative care-only AIN-C Program. In contrast, the preventive care cost components may be construed as providing estimates of the financing requirements of implementing a stand-alone preventive care-only AIN-C Program.

Given the add-on nature of the curative care component, the only costs that considered curative care costs are: (a) the three curative care medicines dispensed by the monitors (trimetropine, paracetamol and ORS) and the value of the time monitors devote to treating curative care consultations, 10 percent of their total time (see Section 3 of Table 3). Quantifying the value of this portion of the monitors' annual time and adding it to the annual cost of providing the three curative care medicines yields an estimated long-term, annual recurrent cost of 258,906 lempiras (US$15,625) for the curative care component of AIN-C. The residual of the long-term, annual recurrent costs of the Program, 995,111 lempiras (US$60,055), are the costs of the preventive care component of AIN-C. As Figure 10 shows, the curative care costs constitute 21 percent and the preventive care 79 percent, of AIN-C's long-term, annual recurrent costs.

Figure 10: Composition of Long-term, Annual Recurrent Cost of the AIN-C Program--Preventive and Curative Care Breakdowns

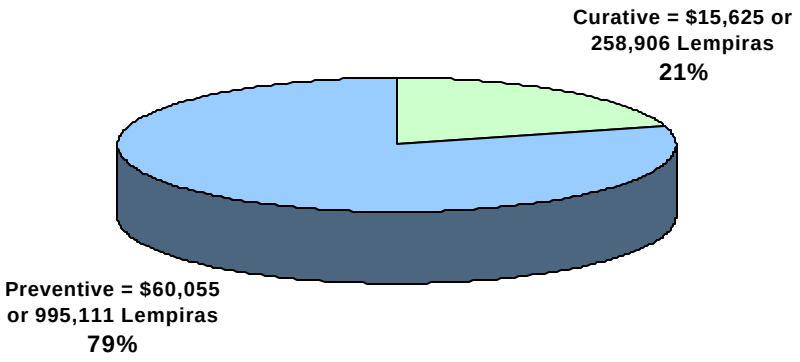
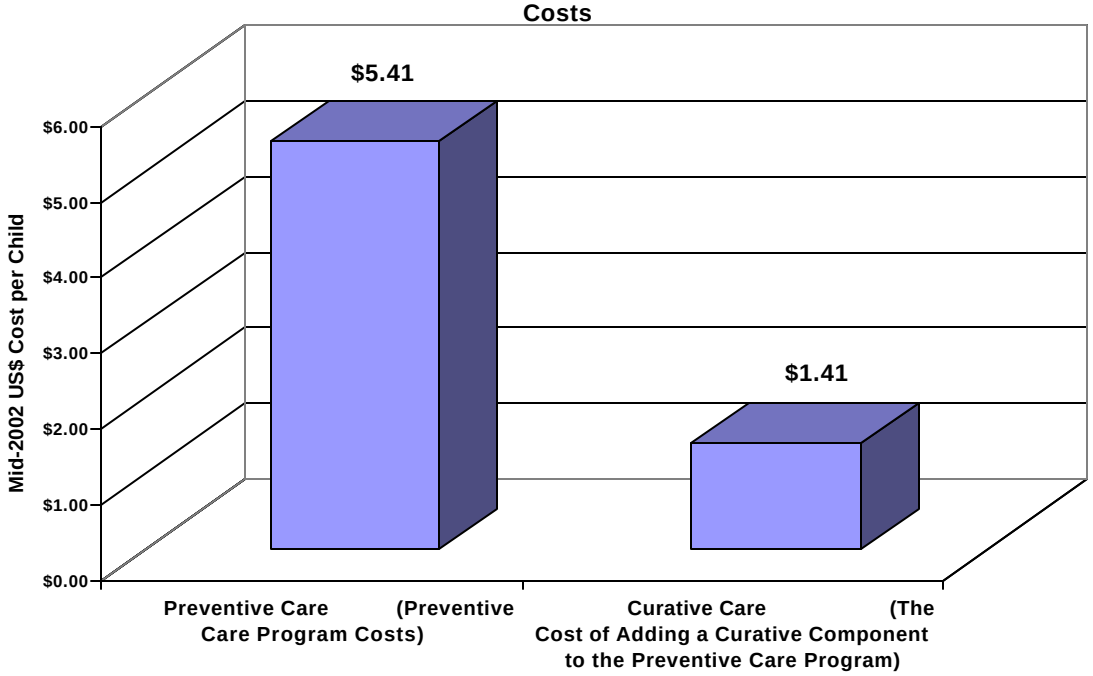


Figure 11 presents the long-term, annual average costs of preventive care and of curative care per child participating in the AIN-C. The preventive care costs 90 lempiras (US$5.41) and curative care costs 23 lempiras (US$1.41) per child under two years of age participating in the Program.[27]

[27] At the outset of this study, the AIN-C Program personnel expressed their keen interest in having an estimate of the Program's cost per child that they could use for planning purposes. There is no ideal, single measure of the average cost per child of the program since AIN-C consists of two sets of activities (preventive and curative care) targeted at two different, not mutually exclusive, populations. The discussion and analysis here simplifies the estimate of the annual average cost per child of the AIN-C Program by calculating it using as the denominator only children under the age of two who are participating in the Program. This slightly over-states the estimated average cost per child because its denominator does not include the number of children aged two to four who are provided access/coverage by, or who receive curative care from the Program. Trying to take into account the two to four year olds, however, unduly complicates the discussion. The average cost per child less than two is the cost per child ***participating*** in the Program, and ***not*** all children in the general population. Children two to four years of age do not directly participate in the program unless they seek curative care, and only about 65 in one "community" do, on average, in one year (compared with about 43 children under two). Trying to incorporate the two to four year olds introduces a second, distinct denominator that varies in terms of the ages of the children involved and in terms of who is counted—children provided access/coverage by the program (a population-based measure) versus children participating in the program (a program-based measure). Hence, combining the measures is tantamount to comparing applies and oranges, and precludes us from being able to calculate a single average cost per child. This consideration, combined with the fact that the overwhelming share of the Program's resources are devoted to children less than two years of age, prompted making the primary cost measure of the study the average cost per child participating in the program less than two years old. However, since the AIN-C is the key program targeting children less than five years old in Honduras, it might also be useful to have the cost of the Program per child under five in the general population. The long-term, annual recurrent cost of the Program per child less than five in the general population is 45 lempiras

Figure 11: The Long-term, Annual Recurrent Cost Per Child Less than Two Years Old Participating in the AIN-C Program: Preventive and Curative Care Costs



(US$2.73), and the long-term, annual incremental budget requirements per child less than five in the general population is 27 lempiras (US$1.60).

If the curative care costs of the Program are spread over all children less than five equally, then the portion of the under two year olds who are participating in AIN-C could be assigned their proportionate share of curative care costs. Combining this cost with the cost of preventive care per child participating in the Program could be regarded as a more precise estimate of the cost per child under two participating in the program. This estimate equals 98 lempiras (US$5.93), 13 percent less than the estimate discussed in the main body of this report. Using this estimate, however, is likely to be misleading since it does not include the costs of providing access to and care for the two to four year olds, which is still a cost that must be paid and accounted for. These considerations prompted the decision to use the somewhat over-estimated average cost per child less than two years of age participating in the program as the major cost metric of the study.

F. SENSITIVITY ANALYSIS AND CHANGES IN COST DUE TO MODIFICATIONS IN THE PROGRAM

The scenario that has thus far been discussed has been labeled the Base Scenario. It is considered the single best set of estimates of the total cumulative and average annual costs of phasing-in the AIN-C Program in a health area and of the long term, annual, recurrent costs of maintaining the program in a health area. This section investigates how changes in some of the assumptions, activities and inputs of the Base Scenario affect the estimated costs of the program. Six alternative scenarios are investigated.[28]

Table 16a and 16b present various cost measures of the total cost and the incremental budget requirements of the Base Scenario and of each of the six alternative scenarios. Table 16a presents these estimates in lempiras of June 2002. Table 16b presents the same estimates in U.S. dollars of June 2002.

[28] Persons interested in modeling other changes in the Base Scenario are encouraged to do so. The Excel spreadsheet program that accompanies this report has been developed in such a way as to facilitate this type of exploratory analysis.

Table 16a
Sensitivity Analysis of the Estimated Costs of the AIN-C/Honduras Program
Estimated Costs of Alternative Scenarios
In Mid-2002 Lempiras

Costing Scenario	Total Cost	Average Total Cost Per Child*	Avg. Total Cost Per Child-Year-of-Participation*
The Base Scenario: Total Costs			
a. Phased-in implementation (6 years)			
1) Cumulative total cost	11,290,163	254	376
2) Average annual cost	1,881,694	319	473
b. Long-term, annual recurrent costs	1,254,016	113	167
Base Scenario: Incremental Budget Requirements**			
a. Phased-in implementation (6 years)			
1) Cumulative total incremental budget requirements	5,999,339	135	200
2) Average annual incremental budget requirements	999,890	152	240
b. Long-term, annual incremental budget requirements	734,667	66	98
Alternative Total Cost Scenarios			
#1: 15 children per community, rather than 25			
a. Phased-in implementation (6 years)			
1) Cumulative Total Cost	11,290,163	418	627
2) Average Annual Cost	1,881,694	525	788
b. Long-term, annual recurrent costs	1,254,016	186	279
#2: 35 children per community, rather than 25			
a. Phased-in implementation (6 years)			
1) Cumulative Total Cost	11,290,163	179	269
2) Average Annual Cost	1,881,694	225	338
b. Long-term, annual recurrent costs	1,254,016	80	119
#3: 2 monitors per community rather than 3			
a. Phased-in implementation (6 years)			
1) Cumulative Total Cost	10,639,733	236	355
2) Average Annual Cost	1,773,289	297	446
b. Long-term, annual recurrent costs	1,194,121	106	159
#4: Without curative care trainings or medicines			
a. Phased-in implementation (6 years)			
1) Cumulative Total Cost	8,522,524	189	284
2) Average Annual Cost	1,420,421	254	380
b. Long-term, annual recurrent costs	922,084	82	123
#5: Without medicines			
a. Phased-in implementation (6 years)			
1) Cumulative Total Cost	9,962,435	221	332
2) Average Annual Cost	1,660,406	286	428
b. Long-term, annual recurrent costs	922,084	82	123
#6: Monitors are paid 5.45 Lps. (US$0.33) per hour, rather than nothing			
a. Phased-in implementation (6 years)			
1) Cumulative Total Cost	13,583,250	302	453
2) Average Annual Cost	2,263,875	370	556
b. Long-term, annual recurrent costs	1,693,013	150	226

*Overstates per child costs by 13 percent because the denominator includes only children under two years of age who receive all of the AIN-C Program's services and does not include children 2 to 4 years of age who receive only curative care services.
**Total direct costs less MOH personnel costs and the costs of supervisory activities #7 and #8.

Table 16b
Sensitivity Analysis of the Estimated Costs of the AIN-C/Honduras Program
Estimated Costs of Alternative Scenarios
In Mid-2002 US$

Costing Scenario	Total Cost	Average Total Cost Per Child*	Avg. Total Cost Per Child-Year-of-Participation*
The Base Scenario: Total Costs			
a. Phased-in implementation (6 years)			
1) Cumulative total cost	681,362	15.3	22.7
2) Average annual cost	113,560	19.3	28.5
b. Long-term, annual recurrent costs	75,680	6.8	10.1
Base Scenario: Incremental Budget Requirements**			
a. Phased-in implementation (6 years)			
1) Cumulative total incremental budget requirements	362,060	8.1	12.1
2) Average annual incremental budget requirements	60,343	9.2	14.5
b. Long-term, annual incremental budget requirements	44,337	4.0	5.9
Alternative Total Cost Scenarios			
#1: 15 children per community, rather than 25			
a. Phased-in implementation (6 years)			
1) Cumulative Total Cost	681,362	25.2	37.8
2) Average Annual Cost	113,560	31.7	47.6
b. Long-term, annual recurrent costs	75,680	11.2	16.8
#2: 35 children per community, rather than 25			
a. Phased-in implementation (6 years)			
1) Cumulative Total Cost	681,362	10.8	16.2
2) Average Annual Cost	113,560	13.6	20.4
b. Long-term, annual recurrent costs	75,680	4.8	7.2
#3: 2 monitors per community rather than 3			
a. Phased-in implementation (6 years)			
1) Cumulative Total Cost	642,108	14.2	21.4
2) Average Annual Cost	107,018	17.9	26.9
b. Long-term, annual recurrent costs	72,065	6.4	9.6
#4: Without curative care trainings or medicines			
a. Phased-in implementation (6 years)			
1) Cumulative Total Cost	514,335	11.4	17.1
2) Average Annual Cost	85,722	15.3	22.9
b. Long-term, annual recurrent costs	55,648	4.9	7.4
#5: Without medicines			
a. Phased-in implementation (6 years)			
1) Cumulative Total Cost	601,233	13.3	20.0
2) Average Annual Cost	100,206	17.3	25.8
b. Long-term, annual recurrent costs	55,648	4.9	7.4
#6: Monitors are paid 5.45 Lps. (US$0.33) per hour, rather than nothing			
a. Phased-in implementation (6 years)			
1) Cumulative Total Cost	819,750	18.2	27.3
2) Average Annual Cost	136,625	22.3	33.6
b. Long-term, annual recurrent costs	102,173	9.1	13.6

*Overstates per child costs by 13 percent because the denominator includes only children under two years of age who receive all of the AIN-C Program's services and does not include children 2 to 4 years of age who receive only curative care services.

**Total direct costs less MOH personnel costs and the costs of supervisory activities #7 and #8.

Alternative Scenarios #1 and #2 are designed to facilitate examining the impact of changes in the number of children enrolled on the average cost of the Program per child. While the recommended number of children per team of three monitors is 25, the actual number varies over time and space. As has already been discussed, Program enrollment is constantly in a state of flux, with newborns entering and children reaching their second birthday, exiting the Program. Fluctuations in the number of births over the course of the year, and changes in the number of births due to changes in population (due to the combined effects of natural growth and immigration/emigration), and over time, as the birth rate slowly declines, all contributed to fluctuations in the number of children participating in the program with the passage of time.

In Alternative Scenario #1 is assumed that there are 15 children and in #2 it is assumed that there are 35. Both Alternative Scenarios #1 and #2 have exactly the same total costs as the Base Scenario: Total Costs. The average total cost per child and per child-year-of-participation, however, are all higher (Scenario #1) or lower (Scenario #2) than in the Base Scenario, owing to the fact that the numerators (total costs) have not changed, while denominators have all decreased (Scenario #1) or increased (Scenario #2). The average cost per child and the average total cost per child-year-of-participation both change in direct proportion to the changes in the denominator. Thus the efficiency of the program may be increased by increasing the number of children participating—at least up to the recommended number of 25, after which the quality of interactions begins to be compromised. Monitors should be encouraged, therefore, to recruit all eligible children (if possible, perhaps by extending the geographic coverage of the program, in rural areas).

In Alternative Scenario #3 it is assumed that there are two, rather than three, monitors per community. Most of the Alternative Scenario #3 activities' costs for are very similar to those of the Base Scenario (varying by 10 percent or less), demonstrating that there are few cost savings that might be realized by reducing the number of monitors. Moreover, trying to reap the relatively minor savings that such a cost-cutting strategy might generate could jeopardize the effectiveness of the program, by reducing the *esprit de corps* that AIN-C/Honduras personnel maintain is generated by having what they regard as the ideal number of Program personnel.

Alternative Scenario #4 is intended to provide other countries that may be considering introducing the AIN-C Program, greater insight about the cost-impact of the curative care component of the program. Dropping the curative care training sessions and medicines, results in cost savings of 25 percent in all costs.

Alternative Scenario #5: The cost of medicines constitutes a substantial share of the long-term, annual recurrent costs of the Program. It is anticipated that at least some readers will be interested in investigating the potential cost savings that could be reaped if medicines were not provided as part of the program. The results show that medicines constitute 27 percent of the long-term, annual recurrent cost of the Program.

The linchpin of the AIN-C Program is the monitor, a volunteer. Honduras' rich tradition of voluntarism in the health sector (described in section 3.B.4), is an important element of the AIN-C Program that may not be characteristic of other countries, or that might exist, but may be less ardent and less effective, in and of itself. In countries that are less blessed than Honduras in this regard, it is likely that the AIN-C Program may have to provide more material incentives to maintain adequate interest in the Program in order to maintain its effectiveness and perhaps even its viability. The implication, of course, is that AIN-C may cost more in other countries where voluntarism is less common and/or is a lesser motivating force.

How much more it might cost is what Alternative Scenario #6 attempts to address—it is not meant to suggest that AIN-C monitors should be paid.[29]

In Alternative Scenario #6, it is assumed that they are paid the equivalent of the lowest paid workers in Honduras, agricultural day-laborers, who are legally mandated to receive 43.6 lempiras per day; the equivalent of 5.45 lempiras (US$0.33) per hour. If monitors were paid 5.45 lempiras per hour it would result in an increase of both cumulative total costs and average annual costs during the six-year phase-in period of 20 percent, and long-term, annual recurrent costs would be increased by 35 percent.

G. Towards a Cost-Effectiveness Analysis of the AIN-C Program

At US$6.8 per child per year, the long-term, annual total cost of the AIN-C Program are relatively low. But "low" compared to what? A cost study conducted in 2000 provides the wherewithal to make a reasonable comparison with a similar MOH service, but one which is facility-based and usually provided by a nurse or nurse auxiliary (Bitrán y Asociados). The Bitrán y Asociados study provides detailed breakdowns of the estimated cost of specific types of services, including the one that most closely approximates the content of the key AIN-C service, the weighing and counseling session—a child growth and development visit. Adjusting the Bitrán y Asociados estimated cost for differences in methodologies and inflation, it is estimated that the MOH's cost of its staff providing one (in-facility) child growth and development consultation was 99.7 lempiras (in mid-2002).[30]

As estimated in the current study, the AIN-C Program's long-term, average total cost per child-year of participation is 167 lempiras. A child-year of participation in the AIN-C Program consists of 12 monthly weighing and counseling sessions plus any follow-up home visits or curative care visits. Dividing the 167 lempiras by 12 yields a first-approximation of the cost of a child growth and development visit of 13.9 lempiras. There remain, however, two limitations to this comparison. First, the content of these visits is not directly comparable. On the one hand, an MOH staff-provided visit involves a more highly trained person—usually a nurse or nurse auxiliary—compared to an AIN-C monitor, suggesting the MOH visit is of higher quality. On the other hand, the AIN-C intervention is a more highly standardized, structured and personalized approach, suggesting that the AIN-C visit is of higher quality. Unfortunately, there is no empirical information about the differences in the quality and content of care of these different providers with which to definitively assess the significance of these differences.

Second, it should be pointed out that the cost of an AIN-C "monthly visit," includes more than just a child's growth monitoring and counseling session. The session also includes curative care treatment and the provision, free-of-charge, of medicines. Medicines, alone, account for 20 percent of the average direct cost per child of a weighing and counseling session.[31] If the cost of these medicines (2.8 lempiras) and the cost of the AIN-C monitors' follow-up home visits and curative care visits (0.2 lempiras per child

[29] The very low turnover rate of the monitors, suggests that they do not have to be paid in order to do their job—at least from an incentive/personal motivation perspective.

[30] The study used a different, more inclusive, approach in its costing methodology. Its estimates include both direct and indirect costs—as opposed to the current study's estimation of only direct costs. In order to make the methodologies comparable, in estimating the cost of a child growth and development visit the indirect costs and the initial required investment costs were subtracted from the total cost. This yielded a direct, recurrent cost estimate of 72 lempiras, in lempiras of 1999. Disaggregating the input costs and adjusting personnel costs for the average increase in MOH salaries from 1999 to mid-2002 and adjusting the value of all other inputs with the GDP deflator resulted in the 99.7 lempira estimate.

[31] The curative care medicines are trimetropine (sulpha-metoxazole), paracetamol and oral rehydration salts, which account for 74 percent of the total value of medicines and vitamins dispensed by AIN-C monitors. The other two items they dispense are vitamin A capsules and iron tablets (ferrous sulphate).

per month) are net out of the calculations, the cost of an AIN-C Program weighing and counseling session falls to 10.9 lempiras.

The average,direct cost per child of an AIN-C Program community-based weighing and counseling session is 10.9 lempiras (US$0.66), just 11 percent of the direct cost of a single MOH staff-provided, facility-based, child growth and development consultation.

H. DISCUSSION

When the AIN-C Program was first introduced, the initial reaction of many MOH staff—especially those most affected by the new Program, the health post nurse auxiliaries—was to regard the Program as another added responsibility, and to complain about and oppose the program. They regarded it as one more new idea that would further add to their already, too numerous responsibilities. Anecdotal evidence suggests, however, that many, if not most, nurse auxiliaries now feel the opposite; viz., that AIN-C has helped to lighten their load. By helping to improve child nutrition and general health status, it is anecdotally reported, AIN-C has helped to reduce the number of children presenting at MOH facilities. This impact on utilization, it is reported, is also due to AIN-C monitors acting in their role as an in-community source of advice about and treatment of curative care ailments. Hence, in most instances, the AIN-C monitors serve as an in-community complement to MOH care and, in some instances, the AIN-C monitors serve as in-community substitutes for MOH care. To the extent that these anecdotes accurately depict the situation in most AIN-C communities, they portray a highly successful community-based program that has helped to improve the effective functioning of local Ministry of Health facilities, while improving access to and utilization of primary health care services. This is an important potential contribution. Documenting its existence, magnitude and mechanisms must be top priorities of the BASICS II impact evaluation currently being conducted.

It appears as though MOH health center workers' opposition to AIN-C is a thing of the past—at least among those that have participated in the program. This is not only due to the fact that health center staff do not feel that they have been forced to shoulder an additional and onerous responsibility, but also because they are increasingly becoming "believers" in the AIN-C approach. In the relatively few interviews with MOH health center staff that were conducted during the course of this study, it was striking how often comments praising the program were made. These included:

- noting that the AIN-C Program had helped to organize the community and bring attention and focus to the plight of young children in the community,
- that it was empowering mothers with practical knowledge about child-rearing, child-health practices and simple disease processes and disease prevention,
- that it had sparked a type of competition among mothers to see whose baby would not get any red arrows (indicating inadequate weight gain) on their Child Health Card or to see whose baby would gain the most weight, and the following observation
- "We have lots of volunteers in this community, but the AIN-C monitors are for me the most important ones."

Captured in these comments is the notion that AIN-C is an uncommon health program in the sense that it concurrently addresses strategies of both the short-term and the long-term. In the short term, it identifies current growth problems and immediately addresses their causes in a simple, highly structured, uniform, locally- and personally-relevant and practical way. While working to address the short-term, it does so in

a manner that concomitantly implements what is a longer-term strategy, by working—from its inception—on improving knowledge, attitudes and practices to foment behavioral change.

Still, achieving the more ambitious and enduring impact of behavior change will require time. It will require maintaining the monitors' *esprit de corps*. It will require retaining the mothers' interest and belief that they are improving the health of their children so that the enormous proportions of mothers who have access to the AIN-C Program continue to bring their children each month to the local weighing and counseling session. To date, maintaining mothers' interest and commitment to AIN-C has not been a problem. Recall, the 2000 mid-term evaluation survey found 92 percent of eligible children enrolled in the program. It is important and will be interesting to see from the evaluation survey currently being fielded if these levels have been sustained.

Similarly, to date, maintaining the monitors' interest in, and commitment to, the program has not been a challenge. Although there are no data, key personnel in both the public and private health sector estimate the annual turnover of AIN-C monitors to be less than 10 percent.[32] Is it reasonable to expect that this level of commitment will be sustained indefinitely? This is difficult to predict. It may be useful to note that a common, though by no means universal, experience around the world in programs and systems relying on moral incentives is that over time the intensity of the motivation dissipates. As it does, so too does performance. While to date this has not been the case in Honduras, it could eventually become a relevant consideration for the Honduran AIN-C Program, and it may be more of a consideration in another country where community participation and voluntarism are less common and have less of a tradition. In that event, there might exist an AIN-C performance cycle wherein motivation, activity levels and performances are initially high (perhaps for as long as a period of several years), but eventually the low level of material incentives saps motivation and adversely affects the monitors and the program. Again, this has not been the experience to date in Honduras, but is something to be mindful of and to monitor.

It may be useful to extend this line of inquiry a bit, and to think of what a lifecycle of AIN-C participation might be like in a given community. Over time, as the program's effectiveness is demonstrated to the community, the workload of the monitors probably decreases as the number of "no-shows" at the monthly weighing and counseling sessions falls and the need for home visits to enroll newborns decreases as mothers become familiar with, more appreciative of, and more actively seek out and participate in the program. Over a still longer timeframe, as the program changes community child-rearing knowledge, practices and norms (the mid-term evaluation results cited earlier testify to this impact being made within a few years), one would expect that participation in the program and the motivation level of both the monitors and the mothers might wane, as the program's short term impact, efficacy and effectiveness decreased. Whether or not this occurs (and, if it does, when it is likely to occur) will depend upon a number of factors, including what is happening to the socioeconomic conditions in a specific home and a particular community. In poorer homes and poorer communities, this erosion can be expected to take place much more slowly. To the extent that the monitors' and/or mothers' interest in the Program does start to wane, this could be an indication that the AIN-C Program has been effective, and that it might be time for it to be phased-out. This cycle is likely to require years before it is fully played out, and there are no indications that Honduras will be at this point any time soon. Nevertheless it may be useful to bear in mind, particularly where budgetary constraints preclude being able to implement as (geographically or thematically) comprehensive a program as might be warranted by health conditions—either in Honduras or in another country.

[32] New monitors who are recruited to take the place of monitors dropping out of the program are trained on-the-job by their fellow monitors., thereby avoiding incurring additional training workshop costs. There is no information about the number who have been so trained or of the quality of these monitors vis-à-vis those formally trained.

I. CONCLUSION

The BASICS mid-term evaluation provided experimental-design-based evidence that AIN-C monitors have been effective in changing mothers' care-giving and child-rearing knowledge, attitudes and practices (Van Roekle et al., 2002). Although there is not yet any evidence concerning the monitors' impacts on outcomes—that is, there are not yet any measures of the program's impact in terms of child growth, nutritional status, morbidity or mortality—if AIN-C monitors are able to maintain this level of effectiveness in changing knowledge, attitudes and practices over time, they are likely to contribute to reducing the demand for both preventive and curative care. According to the MOH health center staff interviewed in the course of this study, this, in fact, is already happening.[33]

Given the disproportionately large share of health care costs that are comprised of personnel costs, it is hardly surprising that when services are provided by volunteers that they are less expensive than when the same services are provided by paid staff. What is striking in the case of the AIN-C Program is the magnitude of the cost differential (the MOH-provided service costs nine times more), particularly when one takes into account the Program's level of coverage, the consistency of (in the communities in which the program has been implemented, to date) its near-universal participation rates and the quality—as measured by the effectiveness—of the behavioral change services it provides. The low cost of the Program, the low turnover in the key personnel of the Program—the community volunteers—and Honduran communities' continued enthusiastic participation in the Program, portend well for its sustainability. In conclusion, all available evidence tells a consistent story: the AIN-C Program is a good buy for the Ministry of Health and the people of Honduras.

[33] It warrants reiterating that the care provided by AIN-C monitors is more accessible to mothers than care provided at an MOH facility and that the more accessible provision of curative care by AIN-C monitors probably encourages the use of services earlier during an illness episode. This probably means that illnesses of children who participate in AIN-C and seek care at MOH facilities are likely to have less severe illnesses and therefore their average level of utilization at an MOH facility is less than it would otherwise be.

REFERENCES

Bitrán Dicowsky, Ricardo y Cecilia Má Cárdenas. 2000. Consultancy report submitted to the Inter-American Development Bank PRIESS Project, Tegucigalpa, Bitrán y Asociados.

Fiedler, John L., Javier Suazo, María Sandoval and Francisco Vallejo. November 2000. "An Assessment of the Ambulatory Care User Fee Systems in Ministry of Health Facilities in Honduras," USAID Partnerships for Health Reform (PHR) Project Technical Report No. 58.

Fiedler, John L. 2001. "The Role, Fee Structure and Performance of the Ministry of Health: An Analysis of the Health Component of the Honduras National Household Income and Expenditures Survey," USAID Partnerships for Health Reform (PHR) Project Technical Report.

Griffiths, Marcia, Kate Dickin and Michael Favin. 1996. *Promoting the Growth of Children: What Works. Rationale and Guidance for Programs.* Tool #4, The World Bank Nutrition Toolkit, The World Bank. Washington DC.

Griffiths, Marcia and Victoria de Alvarado. 1999. BASICS/USAID, *Honduras: The AIN Community Experience*.

Heaver, Richard. 1998. "Improving Family Planning, Health and Nutrition Outreach in India: Lessons from Some World Bank-Assisted Projects," World Bank, Washington DC.

Rama Krishna, Usha, Jorge Matute, Barry Smith, Miguel Calderón and Marcia Griffiths. 1998. *The Findings of the AIN-C Baseline Survey*, BASICS Project/USAID, Washington DC.

Schumacher, Renata, Dilberth Cordero V., David McCarthy and Walter Cerén. 2001. *Evaluación Participativea Al Proceso de Implementación de la Estrategia AIN (AIEPI/AIN-C), Honduras*, BASICS II, OPS, UNICEF.

Secretaría de Salud, Departamento de Salud Materno-Infantil, República de Honduras y BASICS Project/USAID. (no date) *Hoja de Referencia,* Tegucigalpa, Honduras.

Secretaría de Salud, Departamento de Salud Materno-Infantil, República de Honduras y BASICS Project/USAID. (no date) *Listado de Niños y Niñas Menores de Dos Años en la Comunidad,* Tegucigalpa, Honduras.

Secretaría de Salud, Departamento de Salud Materno-Infantil, República de Honduras y BASICS Project/USAID. (no date) *Sistema de Monitoría: Graficamiento de los Indicadores de Seguimiento,* Tegucigalpa, Honduras.

Secretaría de Salud, Departamento de Salud Materno-Infantil, República de Honduras y BASICS Project/USAID. (no date) *Atención Integral a la Niñez: Bases Conceptuales de AIN-C,* BASICS/USAID y Secretaría de Salud.

Secretaría de Salud, Departamento de Salud Materno-Infantil, República de Honduras y BASICS Project/USAID. (no date) *Consolidado Mensual de Indicadores de Seguimiento,* Tegucigalpa, Honduras.

Secretaría de Salud, Departamento de Salud Materno-Infantil, República de Honduras. 1998. *Guia para la Capacitación de Monitoras y Monitores de AIN: Manual Para el Uso del Facilitador.*

Secretaría de Salud, Departamento de Salud Materno-Infantil, República de Honduras. 1998. *Guia para la Capacitación de Personal Institucional en Atención Integral de la Niñez (AIN).*

Secretaría de Salud, Departamento de Salud Materno-Infantil, República de Honduras y BASICS Project/USAID. 2000. *Atención Integral a la Niñez en la Comunidad: Manual del Monitor y Monitora de AIN-C.*

Van Roekel, Karen, Beth Plowman, Marcia Griffiths, Victoria Vivas de Alvarado, Jorge Matute, and Miguel Calderón. 2002. *BASICS II Midterm Evaluation of the AIN Program in Honduras, 2000: Survey Report,* BASICS II/USAID.

World Bank y Secretaría de Salud, Departamento de Salud Materno-Infantil, República de Honduras, *AIN-C, Atención Integral a la Niñez Comunitario: Mejorando la Salud y la Nutrición a Nivel Comunitario*, Webpage: http://www.worldbank.org/lachealth, "El Desafío de la Reforma en Salud: Alcanzando a los Pobres."

ANNEX 1: DETAILED TABLES OF THE MATERIALS AND SUPPLIES FOR THE PREVENTION/PROMOTION AND CURATIVE CARE TRAINING SESSIONS

Activity #1
Facilitator Training:
Prevention and Promotion Component

Materials per Participant

1. Printing of Materials		
Technical Bases of AIN-C		110
Facilitator Guide for Training Monitors		110
AIN-C Monitors Manual		80
AIN-C Booklet Listing of Children < 2		22
Counseling Guides (plastic laminated)		140
Action Guides (plastic laminated)		65
Notebook		20
Child Health Card		1.5
	Sub-Total:	548.5
2. Office Supplies		
Transparent ruler		7
Pencil--3 colors		15
Pencil		3
Booklet		10
Eraser		5
Pencil sharpeners		5
	Sub-Total:	45
3. Photocopies		
Base Line Study (2 pages)		1.0
AIN-C Booklet-Listing of children <2 in the community		1.0
Sick child visit recording page		0.5
Referral slip		0.5
Home visit scheduling page		0.5
Graph of 5 AIN-C indicators		0.5
Monthly report form (to UPS)		0.5
	Sub-Total:	4.5
	Total:	**598**
Cost per training of 15 participants:		**8,970**

Activity #1
Facilitator Training
Prevention and Promotion Component

Materials per Training Session

1. Printing of Materials		
Guide for Training MOH Personnel		110
Enlarged Plastic laminates		330
Growth chart		
Base line study form		
Summary of monthly activities		
Bar Graphs of AIN-C Indicators (6 months)		
Sick child visit recording page		
Referral slip		
Picture of sick child care (n=4)		
Counselling card		
Action guide		
Weight gain table		
Kilograms to pound conversion table		
	Sub-total:	440
2. Office Supplies		
Bond paper		70
Three colored markers (black, red, blue)		30
Three colored, fine-point markers		30
Flipchart paper		50
Cardboard for making posters		8
Masking Tape -- 2 rolls		20
Glue (one bottle)		15
36 inch large ruler (yardstick)		20
Correction fluid (1 bottle)		15
	Sub-total:	258
3. Equipment		
1 Salter scale with baby-holder		340
Video of AIN-C		100
	Sub-total:	440
	Total:	**1,138**
	Recurrent Supplies:	**258**
	Equipment and Durable Supplies:	**880**

Activity #3
Community Training:
Prevention and Promotion Component

Materials per Training

1. Printing of Materials		
Notebook		20
Child health card		1.5
	Sub-Total:	21.5
2. Office Supplies		
Bond paper		70
Three colored markers (black, red, blue)		30
Three colored, fine-point markers		30
Flipchart paper		50
Cardboard for making posters		8
Masking Tape (2 rolls)		20
Glue (1 bottle)		15
36 inch large ruler (yardstick)		20
Correction fluid (1 bottle)		15
	Sub-Total:	258
3. Medicines		
Trimetropine Sulfametoxazol		8
Paracetamol		8
Ferrous Sulfate		2.6
Mebendazol		3
	Sub-Total:	22
	Cost per training:	**301**

Activity #3
Community Training
Prevention and Promotion Component

Materials per Participant

1. Photocopies / Printing		
	AIN-C Monitor's Manual	80
	Action Guide (plastic laminated cards)	65
	Couselling Guide (plastic laminated cards)	140
	Base Line Study	0.5
	AIN-C Booklet-List of children <2 in the community	22
	Sick child visit recording page	0.5
	Referral slip	0.5
	Child health card	1.5
	Monthly Graphing of 5 Indicators (for 6 monthly reports)	0.5
	Monthly Summary of 5 Indicators	0.5
	House Visit Scheduling Page	0.5
	Sub-Total:	311.5
2. Office Supplies		
	Transparent ruler	7
	Three colored markers (black, red, blue)	15
	Three colored, fine-point markers	3
	Booklet	10
	Eraser	5
	Pencil sharpener	5
	Sub-total:	45
3. Equipment		
	1 Salter scale with baby holder (1 per 3 Monitors)	340
	Sub-Total:	340
	Cost per training per participant:	**697**
	Recurrent Supplies per Participant:	**357**
	Equipment and Durable Supplies per Community:	**340**
	Cost per training of 15 participants:	**6,708**

Activity #4
Facilitator Training
Curative Care Component

Materials per Training Session

1. Printing of Materials		
Training Guide: Mangement of the Sick Child		80
Enlarged Plastic laminates		120
Sick child visit recording page		
General Danger Signs in a Sick Child		
Counselling cards (4)		
Action guide		
	Sub-total:	200
2. Office Supplies		
Three colored markers (black, red, blue)		30
Three colored, fine-point markers		30
Poster/chart paper		20
Cardboard for making posters		4
Masking Tape -- 1 roll		10
Correction fluid (1 bottle)		15
	Sub-total:	109
3. Equipment		
Timer		100
Cups		15
Spoons		10
1 liter pitcher		5
Video of AIN-C		100
	Sub-total:	230
4. Medicines		
Trimetropine Sulfametoxazol		4
Paracetamol		4
Ferrous Sulfate		2.6
Vitamin A		0.4
Oral Rehydration Salts		4
Mebendazol		3
	Sub-total:	18
	Total:	**557**
	Recurrent Supplies:	**127**
	Equipment and Durable Supplies:	**430**

Activity #4
Facilitator Training
Curative Care Component

Materials per Participant

1. Printing of Materials		
Enlarged Plastic laminates		120
Sick child visit recording page		
General Danger Signs in a Sick Child		
Counselling cards (4)		
Action guide		
	Sub-total:	120
2. Office Supplies		
Red pencil		5
Graphite pencil		3
Booklet		10
Borrador		5
Pencil sharpener		5
	Sub-total:	28
3. Equipment		
Timer		106
Cups		15
Spoons		10
1 liter pitcher		5
	Sub-total:	136
4. Medicines		
Trimetropine Sulfametoxazol		4
Paracetamol		4
Ferrous Sulfate		2.6
Vitamin A		0.4
Oral Rehydration Salts		4
	Sub-total:	15.0
5. Photocopies		
Referral Form		0.5
Daily log of curative care consultations		0.5
	Sub-total:	1.0
	Total:	**300**
	Recurrent Supplies:	**44**
	Equipment and Durable Supplies:	**256**

Activity #5
Community Training
Curative Care Component

Materials per Training

1. Office Supplies		
	Three colored markers (black, red, blue)	30
	Three colored, fine-point markers	30
	Poster/chart paper	20
	Cardboard for making posters	4
	Masking Tape -- 1 roll	10
	Correction fluid (1 bottle)	15
	Sub-total:	109
2. Medicines		
	Trimetropine Sulfametoxazol	8
	Paracetamol	8
	Vitamin A capsules	0.4
	Ferrous Sulfate	2.6
	Mebendazol	3
	Sub-total:	22.0
	Total:	**131**

Activity #5
Community Training
Curative Care Component

Materials per Participant

1. Photocopies		
	Base Line Study	0.5
	AIN-C Booklet-List of children <2 in the community	0.5
	Sick child visit recording page	0.5
	Referral slip	0.5
	Child Health Card	1.5
	AIN Enrollee List	0.5
	Sub-Total:	4
2. Office Supplies		
	Transparent ruler	7
	Three colored markers (black, red, blue)	15
	Three colored, fine-point markers	3
	Booklet	10
	Eraser	5
	Pencil sharpener	5
	Sub-total:	45
3. Equipment		
	Timer	106
	Sub-Total:	106
	Cost per training per participant:	**155**
	Recurrent supplies per participant:	**49**
	Equipment and durable supplies per participant:	**106**
	Cost per training of 15 participants:	**2,325**

ANNEX 2: DETAILED TABLES OF THE COMPOSITION OF THE CUMULATIVE, DIRECT COSTS OF IMPLEMENTING THE PROGRAM IN ONE HEALTH AREA BY YEAR, BROKEN DOWN BY:

(1) type of input and year

(2) by activity and year and

(3) by program cohort

Annex 2.1
Total Direct Costs of the AIN-C Program
By Object of Expenditure and Year (All Cohorts)

	Personnel Costs	*Per Diem*	Transport Costs	Medicines	Materials & Supplies	Refresh-ments	Rental Cost of Site	Equip-ment	Total Cost
Lemprias									
Year 1	748,623	336,280	39,323	66,386	99,950	33,063	1,375	20,853	1,345,852
Year 2	941,791	467,698	46,451	132,772	117,000	57,875	25,225	20,628	1,809,440
Year 3	1,015,957	500,086	52,571	199,158	125,547	57,375	23,850	20,413	1,994,956
Year 4	1,101,725	536,086	59,699	265,544	134,158	57,375	23,850	20,413	2,198,849
Year 5	1,187,494	572,086	66,827	331,930	142,768	57,375	23,850	20,413	2,402,742
Year 6	751,098	306,466	43,407	331,930	56,059	25,500	23,850	13	1,538,323
Total	**5,746,689**	**2,718,700**	**308,278**	**1,327,720**	**675,483**	**288,563**	**122,000**	**102,731**	**11,290,163**
Percentages									
Year 1	56%	25%	3%	5%	7%	2%	0%	2%	100%
Year 2	52%	26%	3%	7%	6%	3%	1%	1%	100%
Year 3	51%	25%	3%	10%	6%	3%	1%	1%	100%
Year 4	50%	24%	3%	12%	6%	3%	1%	1%	100%
Year 5	49%	24%	3%	14%	6%	2%	1%	1%	100%
Year 6	49%	20%	3%	22%	4%	2%	2%	0%	100%
Total	**51%**	**24%**	**3%**	**12%**	**6%**	**3%**	**1%**	**1%**	**100%**

Annex 2.2
Total Direct Costs of the AIN-C Program
By Year and Activity

Activity	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Cumulative 6 Year Totals
Lemprias							
Preventive/Promotion Training	449,232	406,243	406,243	406,243	406,243	0	2,074,204
Base Line Study-Related Activities	273,875	273,875	273,875	273,875	273,875	0	1,369,375
AIN-C Monthly Meetings and Supervision	269,406	362,906	456,406	549,906	643,406	531,653	2,813,683
Monthly Volunteers Meetings & Community Meetings	309,592	391,176	472,760	554,344	635,928	578,320	2,942,120
Monitors' Incentives	43,749	72,558	101,367	130,176	158,985	144,045	650,880
Curative Care Training		302,684	284,307	284,307	284,307	284,307	1,439,912
Totals	**1,345,854**	**1,809,442**	**1,994,958**	**2,198,851**	**2,402,744**	**1,538,325**	**11,290,174**
Percentages: Of Annual Total Costs							
Preventive/Promotion Training	33%	22%	20%	18%	17%	0%	18%
Base Line Study-Related Activities	20%	15%	14%	12%	11%	0%	12%
AIN-C Monthly Meetings and Supervision	20%	20%	23%	25%	27%	35%	25%
Monthly Volunteers Meetings & Community Meetings	23%	22%	24%	25%	26%	38%	26%
Monitors' Incentives	3%	4%	5%	6%	7%	9%	6%
Curative Care Training		17%	14%	13%	12%	18%	13%
Totals	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Percentages: Of Cumulative 6-Year Total Costs							
Preventive/Promotion Training	22%	20%	20%	20%	20%	0%	100%
Base Line Study-Related Activities	20%	20%	20%	20%	20%	0%	100%
AIN-C Monthly Meetings and Supervision	10%	13%	16%	20%	23%	19%	100%
Monthly Volunteers Meetings & Community Meetings	11%	13%	16%	19%	22%	20%	100%
Monitors' Incentives	7%	11%	16%	20%	24%	22%	100%
Curative Care Training		21%	20%	20%	20%	20%	100%
Totals	**12%**	**16%**	**18%**	**19%**	**21%**	**14%**	**100%**

Year 1	Cohort 1	Cohorts 2-5		Cohort 1	Cohorts 2-5	Cohorts 1&2	All Subsequent Cohorts
Activity 1	42,989		Preventive Component Training	449,232	406,243	856,475	812486
Activity 2	273,875	273,875	Base Line Study-Related Activities	273,875	273,875	547,750	547750
Activity 3	406,243	406,243	AIN-C Monthly Meetings and Supervision	269,406	206,253	474,659	410506
Activity 6	205,253	205,253	Monthly Volunteers Meetings & Community	309,592	139,192	448,784	278384
Activity 7	35,018		Monitors' Incentives	43,749	43,749	87,498	87498
Activity 8	29,135			1,346,854	1,068,312	2,414,166	2,136,624
Activity 9	251,984	81584					
Activity 10	57,618	57,618				if Activity 12>0 need to enter it in list above	
Activity 11	0						
Activity 12	43,749	43,749					
	1,346,854	1,068,312					
Year 2				Cohort 1	Cohorts 2-5	Cohorts 1&2	All Subsequent Cohorts
Activity 4	18,377		Curative Care Component Training	302,884	284,307	586,991	568614
Activity 5	284,307		AIN-C Monthly Meetings and Supervision	157,653	93,600	251,153	187000
Activity 6	93,500		Monthly Volunteers Meetings & Community	251,984	81584	333,568	163168
Activity 7	35,018		Monitors' Incentives	28,809	28,809	57,618	57618
Activity 8	29,135			741,130	488,200	1,229,330	976400
Activity 9	251,984						
Activity 10	0						
Activity 11	0						
Activity 12	28,809						
	741,130						
Year 3							
Activity 6	93500			Cohort 1	Cohorts 2-5	Cohorts 1&2	All Subsequent Cohorts
Activity 7	35,018		AIN-C Monthly Meetings and Supervision	157,653	93500	251,153	187000
Activity 8	29,135		Monthly Volunteers Meetings & Community	251,984	81584	333,568	163168
Activity 9	251,984		Monitors' Incentives	28,809	28,809	57,618	57618
Activity 10	0			438,446	203,893	642,339	407786
Activity 11	0						
Activity 12	28,809						
	438,446						
Preventive	37	2.230537115					
Curative	130	7.860331925		876			
				176.2			
Preventive	2.23						
Curative	7.86			6955			
Total	10.08						
	US$	LMPS		0.199954	9.9%	2-4 yrs olds	
Curative = 22%	1.47	24.42		1137.93	6.6%	< 2 yrs old	
Preventive = 78%	5.23	86.58			2.6098495	0.39843043	
	6.70	111		682.758			
				455.172			
	Total Costs	Incremental Budget Requirements		15.06024	15.091722		
Curative = $15,625 or 259,906	259,905	161,627	15624.92456				
Preventive = $60,055 or 995,1	995,111	573,040	60054.97899				
Total	1,254,016	734,667	75679.90344				
Preventive Care	5.41		-3.94	=diff due to pop-denominator change			
Curative Care	1.41		-0.58616036				
Preventive Care	5.41		0.206480683				
Populations: mid-2002							
national	6,855,000						
<5	1,137,930						
<2	455,172	2.5					
2-4	682,758	0.666666667					
	$ 0.44	per capita based on 96.7 and 6.6% of pop					
		76680	76680				
	27750	11100	12065				
		6.92	6.27				
			0.92				
		5.41	4.98				

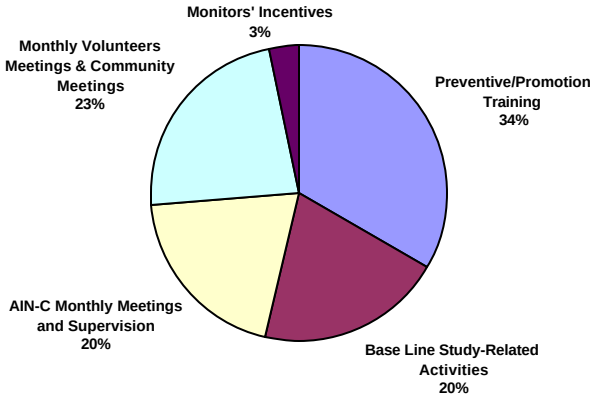
Year 1	Cohort 1	Cohorts 2-5	**Activity**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**	**6 Year Totals**
Activity 1	42,989		Preventive/Promotion Training	449,232	406,243	406,243	406,243	406,243	0	2,074,204
Activity 2	273,875	273,875	Base Line Study-Related Activities	273,875	273,875	273,875	273,875	273,875	0	1,369,375
Activity 3	406,243	406,243	AIN-C Monthly Meetings and Supervision	269,406	362,906	456,406	549,906	643,406	531,653	2,813,683
Activity 6	205,253	205,253	Monthly Volunteers Meetings & Community	309,592	391,176	472,760	554,344	635,928	578,320	2,942,120
Activity 7	35,018		Monitors' Incentives	43,749	72,558	101,367	130,176	158,985	144,045	650,880
Activity 8	29,135		Curative Care Training		302,684	284,307	284,307	284,307	284,307	1,439,912
Activity 9	251,984	81584	**Totals**	**1,345,854**	**1,809,442**	**1,994,958**	**2,198,851**	**2,402,744**	**1,538,325**	**11,290,174**
Activity 10	57,608	57,608				if Activity 12>0 need to enter it in list above				
Activity 11	0									
Activity 12	43,749	43,749								
	1,345,854	1,068,312								
Year 2				Cohort 1	Cohorts 2-5	Cohorts 1&2	All Subsequent Cohorts			
Activity 4	18,377		Curative Care Component Training	302,684	284,307	586,991	568614			
Activity 5	284,307		AIN-C Monthly Meetings and Supervision	157,653	93,500	251,153	187000			
Activity 6	93,500		Monthly Volunteers Meetings & Community	251,984	81,584	333,568	163168			
Activity 7	35,018		Monitors' Incentives	28,809	28,809	57,618	57618			
Activity 8	29,135			741,130	488,200	1,229,330	976400			
Activity 9	251,984									
Activity 10	0									
Activity 11	0									
Activity 12	28,809									
	741,130									
Year 3										
Activity 6	93500			Cohort 1	Cohorts 2-5	Cohorts 1&2	All Subsequent Cohorts			
Activity 7	35,018		AIN-C Monthly Meetings and Supervision	157,653	93,500	251,153	187000	531653	0.42396	
Activity 8	29,135		Monthly Volunteers Meetings & Community	251,984	81,584	333,568	163168	578320	0.461174	
Activity 9	251,984		Monitors' Incentives	28,809	28,809	57,618	57618	144045	0.114867	
Activity 10	0			438,446	203,893	642,339	407786	1254018	1	
Activity 11	0									
Activity 12	28,809									
	438,446									

Annex 2.3
Total Direct Costs of the AIN-C Program
By Object of Expenditure, Year and Program Cohort

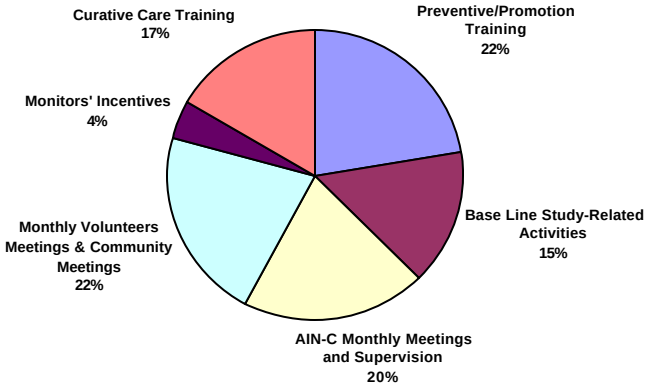
	Personnel Costs	*Per Diem*	Transport Costs	Medicines	Materials & Supplies	Refresh-ments	Rental Cost of Site	Equip-ment	Total Cost
Lemprias									
First Cohort									
Year 1	748,623	336,280	39,323	66,386	99,950	33,063	1,375	20,853	1,345,852
Year 2	419,627	166,078	15,904	66,386	21,681	26,000	25,225	228	741,127
Year 3	287,817	60,706	14,895	66,386	8,627	-	-	13	438,444
Total	1,456,067	563,063	70,122	199,158	130,259	59,063	26,600	21,093	2,525,424
Cohorts 2-5									
Year 1	522,165	301,620	30,547	66,386	95,320	31,875	-	20,400	1,068,313
Year 2	205,975	137,760	7,128	66,386	21,601	25,500	23,850	-	488,200
Year 3	85,769	36,000	7,128	66,386	8,610	-	-	-	203,893
Sub-total	813,908	475,380	44,803	199,158	125,531	57,375	23,850	20,400	1,760,405
Percentages									
First Cohort									
Year 1	56%	25%	3%	5%	7%	2%	0%	2%	100%
Year 2	57%	22%	2%	9%	3%	4%	3%	0%	100%
Year 3	66%	14%	3%	15%	2%	0%	0%	0%	100%
Sub-total	58%	22%	3%	8%	5%	2%	1%	1%	100%
Cohorts 2-5									
Year 1	49%	28%	3%	6%	9%	3%	0%	2%	100%
Year 2	42%	28%	1%	14%	4%	5%	5%	0%	100%
Year 3	42%	18%	3%	33%	4%	0%	0%	0%	100%
Sub-total	46%	27%	3%	11%	7%	3%	1%	1%	100%

ANNEX 3: GRAPHS PRESENTING THE ANNUAL, RECURRENT COSTS OF IMPLEMENTING THE AIN-C PROGRAM FOR EACH OF THE FIRST SIX YEARS OF THE PROGRAM, BY ACTIVITY

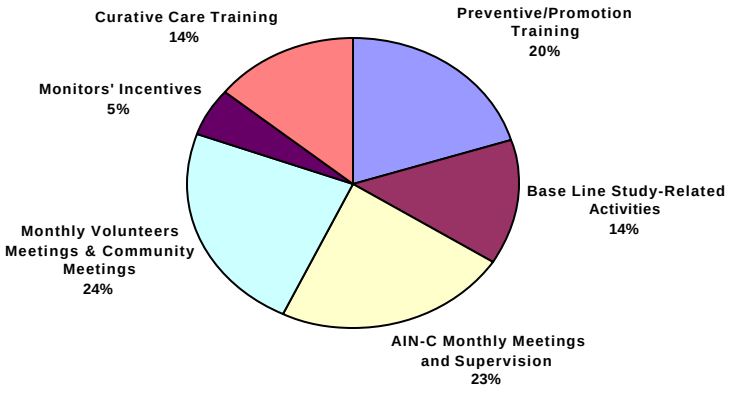
Annex 3.1: Composition of Year 1 Costs of Implementing the AIN-C/Honduras Program in One Health Area, By Activity (30 health facilities, 60 communities, 1500 children less than two)



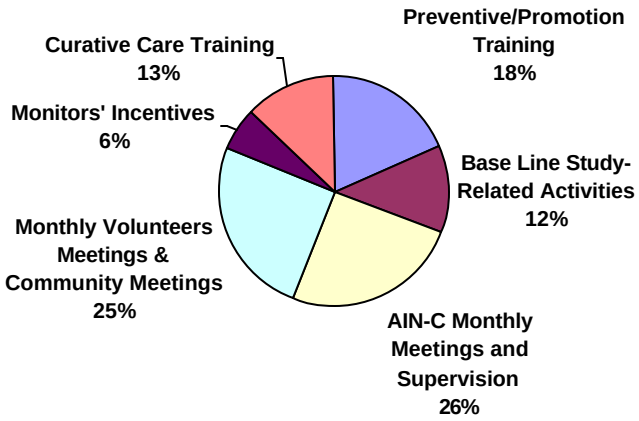
Annex 3.2: Composition of Year 2 Costs of Implementing the AIN-C/Honduras Program in One Health Area, By Activity (30 health facilities, 120 communities, 3000 children less than two)



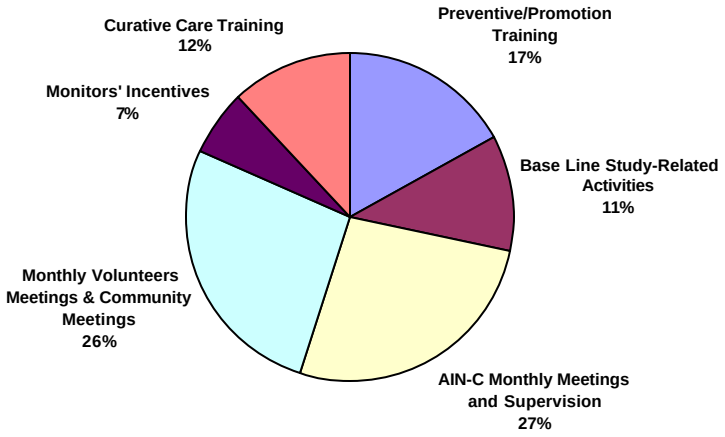
Annex 3.3: Composition of Year 3 Costs of Implementing the AIN-C/Honduras Program in One Health Area, By Activity (30 health facilities, 180 communities, 4500 children less than two)



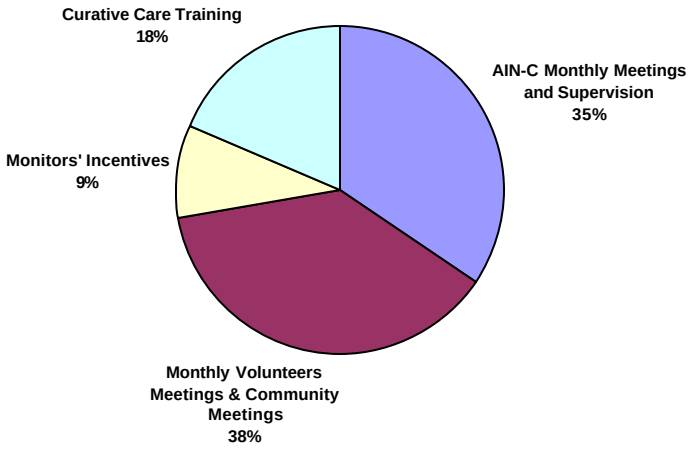
Annex 3.4: Composition of Year 4 Costs of Implementing the AIN-C/Honduras Program in One Health Area, By Activity (30 health facilities, 240 communities, 6000 children less than two)



Annex 3.5: Composition of Year 5 Costs
of Implementing the AIN-C/Honduras Program in One Health Area,By Activity
(30 health facilities, 300 communities, 7500 children less than two)



Annex 3.6: Composition of Year 6 Costs
of Implementing the AIN-C/Honduras Program in One Health Area, By Activity
(30 health facilities, 300 communities, 7500 children less than two)



ANNEX 4: ESTIMATING THE NET IMPACT AND THE INCREMENTAL BUDGET REQUIREMENTS OF AIN-C

Another consideration in estimating the incremental budget requirements of AIN-C concerns the net impact of the program on the MOH's expenditures on medicines. Unfortunately we have no empirical data with which to address this concern. As already noted, the medicines distributed by AIN-C monitors are provided in-kind by MOH staff at the monthly volunteers' meeting at the health center. To an extent, the monitors serve as substitutes for MOH providers. Thus, some portion of the medicines provided by the monitors are substituting for medicines previously provided by (or that in the absence of the AIN-C Program, would be provided by) the MOH staff in health posts and health centers. Hence, the incremental budget requirements of the AIN-C are likely to be somewhat less than the value of the medicines distributed by the monitors. How much less, however, is uncertain. In part, this is because there is no information about the extent to which the monitors are substitutes for MOH staff . If all of the visits that children participating in AIN-C would have made to the MOH facilities are now made, instead, to the monitors, then the medicines provided to these children by the monitors would be equal to at least the amount or value of medicines the MOH staff would have distributed, and there may be no increase in MOH costs. That, however, seems unlikely, as mothers are still likely to and monitors. Moreover, AIN-C is likely to increase the quantities of medicines required in the communities in which it operates. First, because the program has universal coverage of children less than 2 and a coverage rate of children 3 to 5 years of age that is probably higher than that of the health facilities. The relatively greater coverage of AIN-C is likely to mean that it results in an increase in medicine requirements. There is a countervailing consideration, however. Because the care provided by AIN-C monitors is more accessible to mothers than care provided at an MOH facility, it is likely that care is used earlier during an illness episode, which is likely to reduce the severity of the illness, to reduce the likelihood of subsequent utilization and reduce the likelihood of receiving medicines from the MOH, than might otherwise have been the case. Hence, it may be that AIN-C is actually generating savings in expenditures on medicines for the MOH. Absent additional information on the relative importance of these various considerations and the net impact of AIN-C on MOH expenditures on medicines, a conservative approach is adopted. In calculating the incremental budget required to implement the AIN-C Program it is assumed that there are no additional outlays for medicines. Without empirical data as to the net impact, it is assumed that the full cost of all of the medicines distributed by the monitors should be included in the estimated costs and estimated incremental budget requirements of AIN-C. While this assumption may inflate the estimated costs of the program, it will also better ensure that Honduras and other countries that might use these estimates to develop the program's budget do not under-fund it.

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