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BASICS
TRIP REPORT

Preparation of an Evaluation Plan for a Cholera/Diarrhea Education Course in Guatemala

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1600 Wilson Boulevard, Suite 300; Arlington, VA, 22209; USA

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PREPARATION OF AN EVALUATION PLAN FOR A CHOLERA/DIARRHEA DISTANCE EDUCATION COURSE IN GUATEMALA

Guatemala, Guatemala
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Barton R. Burkhalter

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ACRONYMS

BASICS	Basic Support for Institutionalizing Child Survival
CME	Continuing Medical Education
INCAP	Nutrition Institute of Central America and Panama
PAHO	Pan American Health Organization
PRITECH	Primary Technology for Health Care
WHO	World Health Organization

I. INTRODUCTION

The purpose of this trip was to assist the Nutrition Institute of Central America and Panama (INCAP) to complete a detailed implementation plan for the evaluation of INCAP's Long Distance Education Program in Cholera and Diarrhea (the "program"). This program is the fifth in a series of long distance education courses developed by INCAP. All five programs use a combination of mailed written materials with chapter tests, individual written feedback, and general meetings of participants. The first four programs produced increases in knowledge of the participants (based on pre/post test scores) and enrollment growth with each additional course. As a result, INCAP is interested in continuing to develop and implement such courses in Central America.

Considerable interest has been expressed by governments in Central America in pursuing such a course in diarrhea and cholera in light of the recent cholera epidemic in Central America. Furthermore, studies carried out by INCAP found inadequate knowledge and practices related to cholera and diarrhea by physicians and nurses in Central America. As a result, INCAP obtained funding from the Technologies for Primary Health Care Project (PRITECH) to develop and field test written materials for a long distance education course in cholera and diarrhea. These materials are the basis for the present course.

In June 1994, the Basic Support for Institutionalizing Child Survival Project (BASICS) and INCAP jointly developed a plan to evaluate the impact of the long distance education program in cholera and diarrhea on the knowledge and practice of course participants (BASICS Trip Report, B.R. Burkhalter, June 1994). In the first quarter of 1995, PAHO provided funding to INCAP to implement the program in Guatemala and other Central American countries, and BASICS committed resources to assist in the evaluation of the program.

As preparation for the present trip, several meetings were held at BASICS headquarters in Arlington, VA, with representatives from the Pan American Health Organization (PAHO) (Chris Drasbek) and BASICS (Bart Burkhalter, Nancy Keith, David McCarthy, John Murray, and Barry Smith) to discuss the program and its evaluation, including costs, schedule(s), measuring instruments, especially the world Health Organization (WHO) health facility survey , and other surveys, including a drop-out survey. A draft drop-out survey instrument was prepared (Appendix A), and a preliminary review was undertaken of the continuing medical education (CME) literature, including observer bias (Appendix B).

The present trip took place from April 2-7, 1995 in Guatemala. The author was accompanied by Dr. Barry Smith (BASICS) and Chris Drasbek (PAHO). We met daily at INCAP. On Monday, April 3, we met with Hernan Delgado (director of INCAP), Maggie Fischer, Rafael Flores, Arnulfo Noguera, and Junio Robles. Dr. Noguera will direct the implementation and Dr. Robles will direct the evaluation under Dr. Flores. Tuesday through Thursday we met with Drs. Flores, Noguera, and Robles, together and in subgroups, to prepare the detailed implementation plans for the program and its evaluation.

II. PROGRAM IMPLEMENTATION

Under the current funding, the program will be offered in large sections of three countries, including Guatemala. This differs from the plan of a year ago when it was anticipated the program would be offered throughout Guatemala rather than only in certain portions of the country. (This means that the evaluation can now include a simultaneous control group, an option not available a year ago.) A subgroup of Drs. Noguera, Drasbek, and Smith prepared the details of the program implementation which were then reviewed, modified, and agreed to by the entire working group. The final plan was written up and distributed (Appendix C).

The program has seven elements -- (1) the recruitment process, (2) the orientation and graduation meetings, (3) the written text in seven chapters, (4) the written tests at the end of each chapter, (5) the feedback provided by the tutor/monitors in response to the chapter tests submitted by the participants, (6) the one-on-one practicum following chapter 5 provided by the tutor/monitors, and (7) the process to prevent dropouts done by the tutors/monitors. This design of the cholera and diarrhea program differs from the previous four long distance education courses in two important ways. First, the one day, one-on-one practicum (element 6) has been added. Second, the role of the tutor/monitor has been greatly expanded to include not only the practicum, but also a more proactive role in preventing dropouts and in encouraging participation and behavior change.

The schedule to implement the program begins immediately with preparation of materials and recruitment. The tentative date for the first orientation meeting is September 18, 1995, and the tentative meeting for the final graduation meeting is July 15, 1996. The overall budget is about $120,000 with about 1500 participants.

III. EVALUATION PLAN

Drs. Flores, Robles, and Burkhalter worked together as a subgroup to prepare details of the evaluation plan which were then reviewed, modified, and agreed to by the entire working group in order to be sure that it was compatible with the program implementation plan. The final evaluation plan was written up and distributed (Appendix D). Some of the key ideas are summarized here, especially changes from the evaluation plan developed a year ago.

General design

The evaluation will be carried out in five districts of Guatemala, three for the program group and two for the control. Pre-post practice surveys will be held in the program and simultaneous equivalent control groups. The program group will be drawn from course participants from three districts where the program will be implemented in 1995-96 (Esquintla, Guatemala Norte, and Guatemala Sur) and the control group will be drawn from two districts where it will not be implemented in 1995-96. A random sample of 107 enrollees from the

program districts and 71 eligibles who intend to enroll from the control districts will be drawn. (This allows 40 percent dropout in the program group and 10 percent loss in the control group.) A panel design will be used so that the same individuals will be assessed in the pre and post surveys. The WHO health facility survey for diarrhea will be the instrument used to collect the practice data, applied in up to three patient encounters per participant. Pre-post knowledge tests of all participants will be done as in previous courses. Various other information will be obtained to respond to different possible threats to the validity and reliability of the design, including dropout interviews, selected patient exit interviews, post graduation interviews, and before and after data collector tests, as summarized below. This design will yield statistically significant results for improvements in practice of about 20 percentage points or more for prevalence indicators.

Threats to validity and reliability

Various threats to the validity and reliability of the impact (on practice) evaluation exist, which are noted in the left column below. Each of these threats is countered by one or more of the elements of the evaluation as noted in the right column.

Threats	Solution
1. Historical events other than the program that might explain any improvements.	1. (a) Simultaneous control. (b) Post graduation interviews. © Interview tutors/monitors. (d) Analysis of dropouts in relation to time of dropout and to completers and control.
2. Seasonal effects.	2. Pre-post 12 months apart.
3. Natural maturation of subjects.	3. Simultaneous control.
4. Observer bias in measurement instrument.	4. Patient exit interviews and analysis for tracer indicators.
5. Cross-contamination of control by program.	5. Unlikely due to separate districts.
6. Self-selection.	6. Exclude non-inscribers from program group and intended non-inscribers from control.
7. Reliability of data collection process.	7. (a) Instrument widely used by WHO. (b) Before and after data collection tests.

Analysis

The analysis of impact is well described in Appendix D. In addition, a cost-effectiveness analysis has been planned, as described in Appendix E.

APPENDICES

APPENDIX A

INCAP Long Distance Diarrhea Course

-- Drop Out Survey --

(Draft, 3-23-95)

A. Objective

1. The primary objective of this survey is to ascertain the reasons why enrollees drop out of the course so that modifications can be made to reduce the drop out rate.

2. A secondary objective of this survey is to identify possible competing explanations, other than the course, for changes that occur in provider behavior during the course.

B. General Description

3. We need to define "drop out" for purposes of this survey. It is proposed that a drop out is any enrollee who is more than one month behind schedule. This definition needs to be checked against INCAP's experience with previous courses.

4. Several designs are possible: (1) survey all drop outs (as defined in paragraph 3) in the evaluation area as soon as possible after they fall one month behind; (2) survey a sample of drop outs from an area that is not part of the evaluation area so that the survey does not influence drop outs to return to the course; and (3) survey a matched non drop out at the same time as the drop out is surveyed in order to have a control group. At this time I lean towards option 2 because it removes a possible confounder and because finding matches that don't drop out later may create a problem. Besides, the sample of drop outs is likely to be small, say 20 percent, and so it is unlikely that we will be able to make statistically valid statements.

5. The interviews should be conducted in person by an experienced professional in this sort of thing.

6. A questionnaire will be used for the interview of drop outs that contains an introduction and three sections. The three sections are: (1) warm up questions that provide general information, (2) structured questions with predetermined choices for answers, and (3) unstructured questions that probe for the reasons for the drop out and for alternative explanations for possible changes in practices.

7. The introduction gives the reason for the interview. It should be a general mid-course monitoring as part of the course evaluation and not an accusation that the student has dropped out, because they may think they are just slow.

8. The structured questions address five types of reasons for dropping out, namely, low perceived benefit, material too difficult, time, family and personal, and viewpoint of peers and supervisors.

C. DRAFT QUESTIONNAIRE

Introduction

The purpose of this interview is to help with the evaluation of the _____ course. We want to collect data on the attitudes and experiences of enrollees about the course while it is underway.

Warm Up Questions

1. How did you hear about the course?

2. Why did you decide to take the course?

3. How many patients do you typically see in an average day?

4. How many diarrhea and cholera patients do you see on average in a day during this part of the year? How many did you see yesterday?

5. How is the course going so far?

6. How many chapters have you completed?

Structured Questions

7. Based on your experience so far, do you think the course is worth the effort?

1	2	3	4	5
☐	☐	☐	☐	☐
STRONG YES				STRONG NO

8. Is the course more or less valuable than you thought when you enrolled?

1	2	3	4	5
☐	☐	☐	☐	☐
STRONG MORE				STRONG LESS

9. Does the course take too much time?

1	2	3	4	5
☐	☐	☐	☐	☐
STRONG YES				STRONG NO

10. What do your colleagues think about the course?

1	2	3	4	5
STRONG LIKE		NO Opinion/ Don't Know		STRONG DISLIKE

11. Can you tell me any of the comments they have made about it?

12. Do you agree or disagree with the following statements about the course.

	Strong agree 1	2	3	4	Strong disagree 5
a. First meeting was **useful**					
b. Chapters are **difficult**					
c. Chapters are **boring**					
d. Homework is **difficult**					
e. Feedback is **useful**					
f. Can't learn this way					
g. Know it already; nothing new					
h. Disagree with positions					
i. I'm too busy to keep up					

13. Of the chapters you have read, which one is the ...

a. Worst written _____
b. Most difficult technically _____
c. Most interesting _____
d. Most valuable to you _____
e. Biggest waste of time _____

Unstructured Questions

14. What do you like best about the course?

15. What bothers you most about the course?

16. What would you change in the course? Would you change the meetings? The written material? The homework? The feedback? The pace?

17. Have you learned anything in the course so far that has caused you to change any of your patient care practices? If so, which ones?

18. Do you think the course will cause any changes in the practices of your colleagues who are in the course? If so, what?

19. In an earlier study, we found that __% of diarrhea cases had antibiotics prescribed. Do you think the course will cause physicians to modify this practice? How?

20. You were late last month; what is the reason?

21. Can you think of anything that has or might happen in this area that might cause a change in patient care practices, other than this course?

APPENDIX B

Preliminary Literature Review: CME Evaluation

B.R. Burkhalter
April 5, 1995

This preliminary literature review has been done in preparation for the planning of an evaluation of the INCAP Long Distance Education Course for Cholera and Diarrhea, under the auspices of the BASICS project. Most of the information on the impact of CME ("Continuing Medical Education") was taken from Wergin *et al* (nd). Other useful sources included Paul Nutting (personal communication) and Bryce *et al* (nd). Most of the studies reported here were done in the United States.

A. Impact of CME

Four comprehensive reviews of CME evaluation literature were published in the late 1970s and early 1980s. Bertram and Brooks-Bertram (1977) reviewed 65 studies and found that only about 20 percent used true or quasi-experimental designs, only 7 percent tested the reliability and validity of their measuring instruments, and less than 3 percent demonstrated significant effect six weeks or more after the program. Lloyd and Abrahamson (1979) reviewed 47 studies that used "objective" methods, found that about half reported positive results on knowledge or practice, but half of these did not perform statistical analyses, and that only 6 percent used "rigorous" methods and that half of these reported a statistically significant positive impact. Haynes *et al* (1984) reviewed 248 studies dating back to the 1930s, and found only seven studies that were "rigorously" designed and reported on physician behavior and/or patient outcome. All seven reported some modest, but highly variable improvement in physician performance Only one of the three studies reporting on patient outcome found an improvement. Raymond (1986) performed a meta-analysis of 58 studies, of which about half reported statistically significant positive results in criteria examined (mostly knowledge change), with mean effect size of 0.45 (mean of treatment groups nearly ½ standard deviation above mean of controls), and found that duration of program was unrelated to effect size or significance.

More recent and rigorous studies have reported mixed conclusions, some positive and some negative. On the positive side, Klein *et al* (1981) found a significant positive effect of a physician tutorial on prescribing behavior of hospital physicians using a randomized controlled design. Johnson *et al* (1982) also found significant positive effects of a CME program on the prescribing behavior of hospital physicians. Avorn and Soumerai (1983) found that physicians receiving visits from clinical pharmacologists and mailed literature significantly improved prescribing behavior (by reducing inappropriate prescriptions), but physicians receiving only literature showed no effect. White *et al* (1985) found small but significant improvements in patient care six months after a CME program. White *et al* (1985) found significant improvements in the management of acute myocardial infarction after a CME program using a randomized controlled design, but all improvements occurred in 30 percent of course attendees. Jennett (1986) found significant effects in the management of hypertension in two indicators, but no effect on a third. Wergin *et al* (nd) found significant improvements in self-reported practice using telephone interviews and a pre-post controlled design.

On the negative side, Pinkerton *et al* (1980) found a long-term significant effect on physician knowledge, but no effect on practice using chart reviews and a randomized experimental design. Curry and Purkis (1982) found no effect on physician practice despite physician commitments to change, using chart review. Sibley *et al* (1982) found that CME improved learning but had no effect on "auditable quality of care" in a small (eight physicians) but intensive (4500 cases) sample using a randomized control, pre-post design. Evans *et al* (1986) found a short term but not long term improvement in knowledge and no effect on practice of a mail (only) course on hypertension, using a randomized control, pre-post design.

These results suggest that (1) few rigorous studies have been done; (2) CME often results in knowledge improvement, but rarely in practice improvement; (3) improvements in prescribing behavior seem to be achievable; and (4) results are inconsistent and factors causing the inconsistencies have not been well analyzed.

With respect to the last point, Geertsma and Gordon (1982) discuss the difficulties in changing physician practice and propose that the following three elements, or stages, are necessary to change physician behavior:

1) *Aware.* Physician acquires a sense of dissatisfaction with current practice. (Often acquired via written information, such as obtained in CME.)
2) *Try out.* Learn alternative behavior by practice. (Often accomplished via clinical practice.)
3) *Reinforce.* Receives continuing information that reinforces new behavior. (Often acquired from colleagues.)

B. Methodological Issues

1. **Techniques for Measuring Physician Behavior.** A large number of different techniques for measuring physician behavior have been used and studied. Some are more intrusive than others and probably more likely to cause observer bias (a validity problem). They also differ in reliability. There appears to be a rough negative correlation with respect to reliability and validity -- the methods that are more reliable are less valid (more likely to cause observer bias) and vice-versa. Some of the techniques are:

(1) Chart reviews. (Problems: miss information (Zuckerman *et al*, 1975) and don't correlate well with behavior. (Norman *et al*, 1985)

(2) Direct observation.

(3) Recorded "observation," by audio and/or television camera. (Robert and Rensaglia, 1965)

(4) Face-to-face interview of physician afterwards.

(5) Telephone interview of physician afterwards. (Wergin *et al*, nd)

(6) Written questionnaire to physician afterwards. (Markert *et al*, 1981; Ferguson *et al*, 1984)

(7) Face-to-face patient (exit) interview afterwards.

(8) Telephone patient interview afterwards.

(9) Simulated trained patient; patient reports. (Terry *et al*, 1981; Norman *et al*, 1985)

(10) Standardized patients, to avoid inter-patient variance.

(11) Structured skill examination. (Abbatt and McMahon, 1983; Bryce *et al*, nd)

2. **Observer Bias.** This is also referred to as observer effect, audience effect, and Hawthorne effect. It is discussed more in the education, management, and social science literature than in the medical/health literature. The issue is whether the presence of an observer or observing method influences the performance of the person being observed, either absolutely or differentially in a program-control situation. The latter issue is important because observation may not have any differential effect on persons of the same capacity (knowledge), but may have a differential effect on persons of different capacities, especially in a post measurement after a program that has increased capacity.

   The social science literature has reported mixed findings on the importance of observer bias. Some studies show a clear "audience" effect (Cohen and David, 1973; Cottrell, 1968), others report no such effect (Hagan *et al*, 1975; Kent and Foster, 1977), while other studies report effects on some, but not all behaviors (Mercatoris and Craighead, 1974; Robert and Rensaglia, 1965). Some reviewers state unequivocally that there is no question that an observer often influences the behavior of the observed (Webb, 1975). However, some medical studies have not found an observer effect on behavior as reported in patient charts with direct observation (Gerbert *et al*, 1988), or audio taped "observation" (Zuckerman *et al*, 1966).

3. **Self-reporting Bias.** Self-reports by physicians of their own performance and change in their own performance are subject to bias for several reasons, including memory loss, not understanding the question, and motivation to appear better (Sudman and Bradburn, 1982). Nevertheless, Curry and Purkis (1986) found a strong congruence between self-reported and actual physician behavior in prescription writing and other behaviors where documentation and performance are one and the same. In another type of self-reporting (before the fact), Purkis (1982) and Cauffman *et al* (1985) both found a high congruence between "commitment to change" and actual change.

4. **Variance by Patient, Physician and Community.** Stillman *et al* (199) found that, for the same physician, quality of care varies widely from one patient to the next. History-taking, physical examinations, and patient communication performance require about

one day of patients to obtain a stable measure, whereas more complex skills such as diagnosis take longer. White *et al* (1982) found large differences across communities of the impact (on patient care) of a CME program, which may explain why the results of programs in single settings vary so widely and appear inconsistent.

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APPENDIX C

IMPLEMENTACION DEL CURSO DE EDUCACION A DISTANCIA SOBRE DIARREA Y COLERA EN GUATEMALA, EL SALVADOR Y NICARAGUA

OBJETIVOS

Actualizar conocimientos del personal de salud, específicamente a médicos y enfermeras que trabajan en el Sector Público, Privado y Organismos No Gubernamentales en la prevención y manejo de casos de diarrea aguda y cólera.

Vía educación a distancia llegar a profesionales quienes generalmente no participan en actividades de capacitación tradicional.

En cinco comunidades seleccionadas de guatemala, determinar el impacto del curso en el mejoramiento de las prácticas en el manejo de casos de enfermedad diarreica y cólera y medir el cambio en conocimientos.

Fortalecer a instituciones docentes o departamentos de formación y desarrollo de recursos humanos en salud, en la prevención y manejo de casos de enfermedad diarreica y cólera.

ESTRATEGIAS

Para la operacionalización del Curso se organizará, a nivel de cada país, un comité nacional cuya función principal será la coordinación integral del curso; en este comité estarán representados delegados de las Facultades de Medicina y Enfermería, Escuelas de Salud Pública y/o Epidemiología, el Responsable Nacional del Control de Enfermedades Diarreicas, el Coordinador del Grupo Técnico Básico del INCAP y el Asesor Materno Infantil o Epidemiología de las representaciones de la OPS. Este comité tendrá además, la función de diseñar y organizar la estrategia global para la implementación del curso.

Utilizando criterios de riesgo epidemiológico de enfermedades diarreicas y cólera, se escogerán cinco áreas descentralizadas, según el esquema de cada país dentro de las reformas del Sector Salud (AREAS, SILOS y SILAIS). En todos los casos, una de las áreas corresponderá a la región metropolitana de las capitales de cada uno de los países.

Se reclutará a un coordinador nacional para la conducción, supervisión y evaluación del curso en su conjunto, el que a su vez será el tutor de los participantes del curso en la región metropolitana. Este funcionario recibirá un estipendio mensual y apoyo para actividades de supervisión, el funcionario puede proceder del Sector Público, Privado o de Organismos no Gubernamentales. De igual manera, se reclutarán cuatro tutores que tendrán la responsabilidad de conducir, coordinar, supervisar y evaluar las actividades en cada una de las áreas descentralizadas correspondientes quienes recibirán un incentivo económico.

En el anexo 1, se especifican las funciones de los coordinadores y los tutores, lo mismo que los requisitos necesarios para ejercer estas funciones.

A nivel de la sede del INCAP, el componente de implementación del curso estará bajo la responsabilidad del área Gerencial de Cooperación Técnica y Transferencia de Tecnología, donde se designará a un profesional experto en la materia para la gerencia general del mismo en Guatemala, El Salvador y Nicaragua, quien contará con apoyo secretarial y la asesoría técnica de expertos en el uso de la metodología de educación a distancia y de los contenidos técnicos de los módulos del curso y del material de apoyo para la enseñanza de estos contenidos.

Se explorará en cada país la factibilidad de que instituciones docentes o departamentos de formación y desarrollo de recursos humanos en salud, asuman responsabilidades gerenciales del curso, especialmente en el período de prácticas en el manejo de casos de diarrea y cólera.

Se coordinará con los Ministerios de Salud y colegios o asociaciones profesionales, para otorgar créditos que le sean válidos en la carrera profesional de los postulantes.

El Coordinador de la Cooperación Técnica del INCAP en Guatemala, El Salvador y Nicaragua, coordinará todas las actividades a nivel país y relación país-sede. Todas las comunicaciones y operaciones técnico-administrativas, se realizarán a través de las representaciones de OPS en los países.

Se desarrollaran actividades de promoción y motivación utilizando diferentes medios de comunicación, y se solicitará el apoyo del Ministerio de Salud, Seguro Social, Universidades y centros de formación y capacitación de recursos humanos, ONG's, Asociaciones y colegios profesionales, Sector Privado y organismos de cooperación internacional. En función de los recursos disponibles actualmente, se espera alcanzar una cobertura de 400 participantes en Guatemala, 200 en El salvador y 200 en Nicaragua. Se dará capacitación y dotará de material del curso a los centros de capacitación permanente en el Sector Salud, con la finalidad que incorporen la temática en sus programas y puedan continuarse las acciones de educación a distancia cuando este curso haya finalizado.

El cuadro No. 1 muestra el cronograma de actividades para el período abril 1995 a julio 1996.

Para la implementación del curso se cuenta con un presupuesto de US$121,810 cuyo desglose por elemento de gasto se presenta en el anexo 2.

CUADRO No. 1

CRONOGRAMA DE ACTIVIDADES

ACTIVIDADES	1995									1996					
	A	M	J	J	A	S	O	N	D	E	F	M	A	M	J
1. Revisión y preparación de material del curso (módulos, y materiales de apoyo).	X	X													
2. Reproducción y envío de módulos y materiales de apoyo (3 cotizaciones).			X	X											
3. Recepción de módulos y material de apoyo en los países.															
4. Promoción del curso, reclutamiento de promotores y tutores, organización del comité nacional de coordinación del curso.	X	X													
5. Inscripción y acreditación del curso.			X GUT	X	X ELS NIC										
6. Curso de capacitación de tutores y coordinadores.						4-8									
7. Primera sesión presencial pre-test, entrega de primer módulo.						18									
8. Evaluación primer módulo y envío módulo 2.							30								
9. Evaluación módulo 2 y envío módulo 3.									11						
10. Evaluación módulo 3 y envío módulo 4.										22					
11. Evaluación módulo 4 y envío módulo 5.												11			
12. Inicio de la práctica en manejo de casos.													15		
13. Evaluación módulo 5 y envío módulo 6.													22		
14. Evaluación módulo 6 y envío de módulo 7.															3
15. Sesión presencial fin de curso, evaluación post y entrega de diplomas.															

ANEXO 1

PERFIL DEL COORDINADOR DEL CURSO SOBRE ENFERMEDADES DIARREICAS Y COLERA A NIVEL PAIS

REQUISITOS:

Médico, de preferencia pediatra o epidemiólogo, que tenga experiencia en epidemiología y manejo de casos de las enfermedades diarreicas y en la gerencia de programas de salud.

CONOCIMIENTOS SOBRE:

- Naturaleza y magnitud de las enfermedades diarreicas y cólera.
- Epidemiología de las enfermedades diarreicas y cólera.
- Estudios antropológicos sobre comportamiento en salud.
- Diagnóstico y tratamiento de casos de diarrea y cólera.
- Medidas preventivas a nivel familiar y de la comunidad.
- Métodos y procedimientos para la promoción de programas con participación comunitaria.
- Técnicas de capacitación de personal de salud y líderes de la comunidad.
- Uso de materiales educativos.
- Técnicas de comunicación social de uso en el nivel local.
- Metodología de Educación a Distancia.
- Gerencia y administración de programas de lucha contra las enfermedades diarreicas y cólera.
- Evaluación educativa.

HABILIDADES PARA:

- Trabajar en equipo y establecer buenas relaciones humanas.
- Promover y trabajar con la comunidad.
- Promover, organizar, programar, conducir, administrar, supervisar y evaluar programas locales de lucha contra las enfermedades diarreicas y cólera.
- Capacitar personal de salud y líderes en forma activa y participativa.
- Llevar la gerencia del Curso a Distancia sobre enfermedades diarreicas y cólera.
- Ejercer liderazgo en todos los niveles de servicios en salud.

- Coordinar instituciones que trabajen con objetivos comunes.

ACTITUDES:

- Iniciativa y Creatividad
- Alto grado de responsabilidad para el cumplimiento de los compromisos contraídos en el Proyecto.
- Orden y disciplina en el trabajo.
- Excelente predisposición para trabajar en equipo y con la comunidad.

FUNCIONES

. Promover la organización del Comité Nacional y mantener informando a sus miembros sobre el grado de avance del curso, y análisis de fortalezas y restricciones.

. Coordinar con los tutores las actividades programadas.

. Capacitar a los tutores para el correcto desempeño de sus funciones.

. Supervisar el trabajo de los tutores en sus lugares de trabajo.

. Participar en la organización y desarrollo de las sesiones presenciales.

. Mantener un sistema de información que permita dar seguimiento y evaluar el cumplimiento de los objetivos y actividades programadas.

. Organizar, facilitar y participar en el taller de capacitación de tutores.

. Garantizar el suministro oportuno de los módulos del curso y materiales de apoyo.

. Elaborar informes periódicos de progreso y de evaluación cada seis semanas o según lo establecido en el calendario de actividades.

. Ejercer las funciones de tutor de los participantes del curso en el área metropolitana de la ciudad capital.

PERFIL DEL TUTOR DEL CURSO A DISTANCIA SOBRE ENFERMEDADES DIARREICAS Y COLERA

REQUISITOS:

. Médico, de preferencia pediatra o epidemiólogo, y/o enfermera.

. Que trabaje en hospitales, centros de salud o universidades ubicadas en lugares cercanos a la residencia y trabajo de los estudiantes.

. Que trabaje en atención de casos de diarreas y cólera y en prevención, o en docencia de estos temas.

CONOCIMIENTOS SOBRE:

- Naturaleza, magnitud y epidemiología de las enfermedades diarreicas y cólera.
- Formas de diagnosticar y tratar los casos.
- Medidas preventivas.
- Procedimientos de enseñanza-aprendizaje aplicados en la Educación a Distancia.
- Formas de conducir sesiones presenciales.
- Atención de consultas personales.

HABILIDADES PARA:

- Enseñar en forma individual y de grupo cómo diagnosticar y tratar casos de enfermedades diarreicas y cólera.
- Conducir entrevistas y sesiones presenciales sobre el tema.
- Trabajar en equipo.

ACTITUDES:

- Comprensión y paciencia para conducir los procesos de enseñanza-aprendizaje.
- Amabilidad en la atención de consultas de los estudiantes.

FUNCIONES

- Promover el curso entre médicos y enfermeras en su área de trabajo.
- Inscribir a los participantes y mantener un registro con los datos básicos de los mismos.
- Organizar y desarrollar una Sesión Inaugural e Informativa, donde se formaliza la participación de los estudiantes, se hace el pre-test y se le entrega el primer módulo o unidad con las explicaciones respectivas.
- Resolver las consultas de los estudiantes.
- Garantizar la recepción de los módulos por parte de los estudiantes.
- Revisar y corregir las hojas de autoevaluación y dar apoyo a los estudiantes que muestren bajo rendimiento.
- Indagar sobre las causas de deserción y promover la reinserción de los desertores.
- Mantener comunicación y coordinación con el coordinador de los cursos en el nivel central.
- Participar en las sesiones presenciales y actividades de práctica en el manejo de casos.
- Coordinar en su área de trabajo con instituciones involucradas en el curso, con énfasis en aquellos que darán facilidades para las práctica de los estudiantes.
- Proveer datos solicitados por los coordinadores para el Sistema de Información.

ANEXO 2

PRESUPUESTO

ELEMENTO DE GASTO	US$	SUBTOTAL
230 Viajes y viáticos coordinador sede-países.	6,000	6,000
390 Reproducción y envío de módulos	20,000	BASIC
STC Dr. Urrutia	2,000	BASIC
Promoción inscripción	1,000	
ASC 12 tutores, 3 coordinadores	24,360	
Viáticos locales	3,150	50,510
399 Medio tiempo coordinador (6 m)	20,400	
Secretaria en la sede	7,000	
Apoyo secretarial en 3 países	9,000	36,400
490 Gastos generales de operación, comunicaciones, reproducción de materiales, envío de módulos		
2,347 x 3 países	7,041	
3,600 sede	3,496	
Promoción inscripción (500 x 3 países)	1,500	12,037
550 2,000 x 3 países, más 2,000 sede	8,000	8,000
820 Cursos y seminarios, capacitación coordinadores y tutores y actividades presenciales		
1,000 x 3 países	3,000	
Participación asesores a cursos de capacitación	3,800	BASIC 6,800
	TOTAL	119,747

APPENDIX D

Organización Panamericana de la Salud
Instituto de Nutrición de Centro América y Panamá

CURSO A DISTANCIA SOBRE CONTROL DE ENFERMEDADES DIARREICAS Y COLERA

Implementación

Evaluación

-Propuesta-

Grupo de Trabajo
Barton R. Burkhalter*, PhD, BASICS
Christopher J. Drasbek , MD, OPS
Rafael Flores, Dr PH, INCAP/OPS
Arnulfo Noguera, MD, INCAP/OPS
Junio Robles, MD, INCAP/OPS
Barry Smith, MD, BASICS
Juan Urrutia, MD, INCAP/OPS

* en orden alfabético

Evaluación del Curso a Distancia sobre Control de Enfermedades Diarreicas y Cólera

A. *Objetivos*

1. Determinar el impacto del curso en el mejoramiento de las prácticas del manejo de casos de enfermedad diarréica y cólera.

2. Determinar el costo-efectividad del curso[1].

3. Medir el cambio en conocimientos producido por el curso de educación a distancia.

4. Identificar los factores que predicen deserción en el curso de educación a distancia.

5. Identificar los factores facilitadores y restrictivos en el cambio de prácticas[1].

B. *Metodología*

1. Determinación del impacto en prácticas

a. Diseño

Se utilizará un diseño cuasi-experimental de grupo control no equivalente (2) en donde el grupo CURSO estará constituído por 107 participantes voluntarios al inicio del curso (ver página 3, tamaño de la muestra) provenientes de una muestra simple aleatoria de las áreas de salud de Guatemala Norte, Guatemala Sur y Escuintla y el grupo NO CURSO estará constituído por 71 participantes potenciales (personas que desearían participar en el curso, pero

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[1] Para poder lograr este objetivo en la presente evaluación, está pendiente obtener financiamiento adicional.

que por motivos de la implementación del mismo, sus áreas no estarán incluidas en esta fase) de las areas de salud de Sacatepéquez y Sololá.

Es importante hacer notar que, para poder seleccionar a los participantes del grupo CURSO, se necesita contar de antemano con la lista de los mismos. En el caso del grupo NO CURSO, el equipo de evaluación (ver presupuesto) elaborará la lista de los participantes potenciales y seleccionará los 71.

Diagramáticamente el diseño se puede visualizar de la siguiente manera:

Grupos	Tiempo		
	Inicial (1)		Final (2)
CURSO (1)	medida $_{11}$ n=107	Curso a distancia	medida $_{12}$ n=64
NO CURSO (2)	medida $_{21}$ n=71		medida $_{22}$ n=64

Es claro que al final habrán 5 grupos: los que completaron el curso (n=64), los que desertaron (n=36), los inscritos que se perdieron (n=7), lo que querían participar y no se perdieron (n=64) y los que querían participar y se perdieron (n=7). Se harán medidas de las variables respuestas (ver a continuación) antes y después del curso en los grupos: CURSO, DESERTORES y NO CURSO.

b. Variables

El impacto del curso será medido por el cambio estadísticamente significativo que se observe en las siguientes variables:

1. porcentaje de casos evaluados correctamente,
2. porcentaje de casos hidratados correctamente,
3. porcentaje de consejos adecuados a responsables,
4. porcentaje de casos con disentería tratados con antibióticos adecuadamente, y
5. porcentaje de casos manejados adecuadamente.

Adicionalmente, se recolectarán otras variables confusoras y/o covariables (ver anexo 1) que serán utilizadas en el análisis.

c. Tamaño de muestra

Se definió que el cambio mínimo importante para ser considerado como impacto, es una diferencia entre el final y el inicio en cada una de las variables citadas anteriormente, en por lo menos 20% en términos absolutos. Se aceptó que el nivel de significancia, al cual se harán las pruebas estadísticas para determinar si el cambio es significativo, será de .05 (α)y el poder de las pruebas a un 80% (β = .10). Utilizando la fórmula para calcular tamaño de muestra entre dos proporciones (3):

$$n' = \frac{(c_\alpha\sqrt{2\,\bar{P}\,\bar{Q}} - c_{1-\beta}\sqrt{P_1Q_1+P_2Q_2})^2}{(P_2-P_1)^2}$$

se determinó que el tamaño mínimo para cada grupo sería de 64 participantes (inscritos o potenciales). Sin embargo, revisando la experiencia de otros cursos a distancia en el área centroamericana, se asumió que la deserción del grupo que se inscriba al inicio será de un 40% y que se tendrá una pérdida del 10% en el seguimiento de los participantes al final del curso (por migración, u otras causas) y por lo tanto, el grupo CURSO al inicio será de 107 y el grupo NO CURSO de 71.

d. Recolección de datos

Las variables mencionadas anteriormente serán recolectadas utilizando la metodología de Encuestas OPS/OMS para Establecimientos de Salud (EES): Manejo de Casos de Diarrea (4). Se utilizarán los formularios de observación, responsable del niño y conocimientos del personal de salud. Para el efecto se necesitarán 2 equipos de encuestadores médicos de 4 personas cada uno, que recolectarán la información en el período inicia y final en un mes, respectivamente.

Los médicos encuestadores serán capacitados y estandarizados durante 3 semanas: en la primer semana se hara una capacitación sobre el manejo clínico de casos de diarrea y cólera, la segunda semana sobre la metodología del EES y en la tercer semana se enfatizará la estandarización y evaluación de la confiabilidad de los encuestadores. Al final de la segunda semana se hará una prueba de confiabilidad y en función de los resultados de esta se hará un último ajuste en la capacitación, antes de proceder a la segunda prueba de confiabilidad previo a la recolección de datos.

Tanto en el período inicial como en el final, se realizará una prueba de confiabilidad para tener información sobre probables efectos debidos a la EES sobre las variables de impacto que se están utilizando.

Para validar la metodología de recolección de datos con respecto a posibles efectos de observadores, se seleccionarán variables trazadoras en las cuales se pueda medir la confiabilidad sin observar al participante. Por ejemplo, la conducta para preescribir medicamentos y la educación proporcionada al paciente puede ser medida por encuestas al salir de la consulta. Durante el día anterior a la medición en hospitales, se realizarán entrevistas de salida en pacientes atendidos por participantes seleccionados sobre estas variables trazadoras. Estos datos serán comparados con la conducta observada para estimar el sesgo de observación.

e. Procesamiento de Datos

Los datos obtenidos a través de los tres formularios citados anteriormente, serán procesados utilizando el paquete estadístico Epi-Info (5). Actualmente existe un programa elaborado para obtener los indicadores de evaluación de las acciones establecidas dentro del Programa de Control de la Enfermedad Diarreica, de acuerdo a las normas nacionales.

f. Análisis de Datos

Inicialmente se comparará el cambio observado en el grupo CURSO vrs. el cambio observado en el grupo NO CURSO, en término de proporciones, para ello se utilizará una prueba de χ^2 siempre y cuando los supuestos para el uso de la misma se cumplan, de lo contrario, se utilizará una prueba exacta de Fischer (3). Si se observara que hay una

posible interacción entre tratamiento (CURSO vrs. NO CURSO) y tiempo, que pudiera estar confundiendo la comparación mencionada anteriormente, se utilizará el análisis de regresión múltiple logística para incluir la interacción y el efecto principal (1). Dado que los tamaños de muestra son pequeños se utilizarán procedimientos exactos para el modelaje. Una ventaja del enfoque con el modelo de regresión múltiple logística es que se podrán incluir variables confusoras de las cuales se va a tener información, por ejemplo, el nivel de conocimientos (al inicio y al final), actitudes hacia el curso y experiencias del curso (ver anexo 1). Como se espera tener un grupo de desertores, este fácilmente podría ser incluido como otro factor en el modelo logístico y de esta manera potenciar el enfoque analítico.

Es importante recordar que habrá que controlar por el nivel de capacitación de los participantes en el curso, por ejemplo, si han participado en el curso intensivo presencial de 4 días.

2. **Costo/Efectividad**

The evaluation of the INCAP program will yield information on the change in key behaviors of participants brought about by the course. However, in order to translate these results into public health terms so that the benefits to the country can be estimated and so it can be compared to other training programs, a cost-effectiveness analysis must be done. In other words, the cost-effectiveness analysis will translate the evaluation into terms that are meaningful to governments and donors.

a. Costs. It is clear that the program has significant economies of scale. Therefore, the cost analysis needs to address cost as a function of the number of participants, as well as defining the actual costs for the program as implemented in 1995-6. Due to the conceptual difficulties inherent in defining overhead costs and the estimation of true marginal cost, sensitivity analysis with cost ranges should be done. Costs and definitions of costs reported for alternative education programs should be sought out so that valid comparisons can be made.

b. Effects. Various types of effects will be measured during the evaluation,

including outputs such as graduates and dropouts, provider based quality of care such as percent improvement in cases diagnosed or treated appropriately by participants, and community-based quality of care such as percent of all diarrhea cases treated effectively or decrease in inappropriate hospital inpatient days or inappropriate drug prescriptions. We will not have the data to estimate patient outcomes.

c. Linking Costs and Effects. The above information will allow us to estimate the cost of achieving various effects under different assumptions, and compare this to other training programs (to the extent such information is available) and to other public health programs. Such estimates will not be exact, but will provide rough estimates under transparent assumptions that are meaningful.

d. Required Data. In order to make the above analysis, the following data is required from the program and program evaluation.

i. Line item costs by country.

ii. Number of eligible persons, enrollees, and graduates by country.

iii. Absolute change in performance of key practice indicators due to program, as a function of diarrhea patients encountered.

f. Required Resources. Analyst for 3 weeks. Competent literature review. Access to INCAP staff who do the evaluation.

3. Cambio en conocimientos

El cambio en conocimientos se medirá por la comparación entre la calificación inicial y final, de la prueba de conocimientos que está incluida en el curso a distancia, con los participantes que completen los 7 módulos.

4. Factores predictores de deserción

Los factores que determinan la deserción en el curso a distancia, serán identificados por un análisis de regresión múltiple logística (1), con las variables que se recolectarán en el cuestionario sobre actitudes y experiencias de los participantes, que aparece

en el anexo 1. A cada uno de los participantes que se inscriban en el curso se les llenará un cuestionario de actitudes y experiencias, ya sea al final del curso cuando lo complenten o bien cuando sean considerados que desertaron del mismo. El cuestionario será llenado por el tutor respectivo (ver implementación). En esta evaluación se considera que un participante desertó del curso cuando hayan transcurrido 2 semanas después de que el tutor intentó recuperarlo. En ese momento, el tutor procederá a llenar el formulario del anexo 1[2]. Es posible que el llenar el cuestionario disminuya la tasa de deserción.

5. Factores asociados con las prácticas

Después de la medición final se hará un estudio etnográfico en 10 participantes que hayan mostrado cambios mayores o iguales que el 20% en las variables respuesta y en otros 10 participantes que hayan mostrado cambios menores al 10%, con el objetivo de identificar las razones por las cuales se dieron o no cambios de esas magnitudes. Dado que este estudio será realizado en agosto de 1996 y que en el grupo actual no se contó con un antropólogo(a), se presupuestó servicios de consultoría para el diseño y realización del mismo.

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2 este formulario debe ser revisado y evaluado en términos de validez y confiabilidad.

Borrador, Abril 6, 1995

CRONOGRAMA PARA LA EVALUACION

ACTIVIDAD	MESES 1,995 - 1,996														
	Jun	Jul	Aug	Set	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Selección y contratación de personal	1 - 30												1 - 30		
Capacitación clínica		3-7												4-8	
Capacitación EES		10- 14												11-15	
Confiabilidad de EES		17-21													
Selección muestra		10-14													
Citas con muestra		17-28												4-15	
Medición grupo NO CURSO		24-28	1-4											18-31	
Medición grupo CURSO			1 -18												1 - 14
Encuestas desertores					X	X	X	X	X	X	X	X	X		
Encuestas etnográficas															X
Entrada de datos			21-25										X	X	X
Analisis de datos			28-31												X
Informe			28-31												X

PRESUPUESTO MEDICION INICIAL
JUNIO-AGOSTO, 1996

CODIGO	ELEMENTO	DETALLES	COSTO U.S.
	PERSONAL		
030	1. Coordinador	NP-02-01 $1,915/M X 3 Meses	5,745
390	2. Secretaria Administrativa	NA-04-01 $ 589/M X 3 Meses	1,767
390	3. Supervisor de Campo	NP-01-01 $1,210/M X 2 Meses	3,630
390	4. Médicos entrevistadores[3]	CA-05-01 $ 538/M X 2 Meses	8,608
390	5. Chofer	CA-04-01 $ 444/M X 1 Mes	444
230	VIATICOS		2,145
230	TRANSPORTE	2,250 Kms. X $ 0.30	675
550	SUMINISTROS		497
490	GASTOS DE OPERACION		1,000
820	CAPACITACION		525
390	ANALISIS DE DATOS		1,000
	Sub-Total		25,264

[3] Dos médicos serán contratados con los fondos de BASICS (US$4,304).

PRESUPUESTO MEDICION FINAL Y TOTAL DEL PRESUPUESTO DE EVALUACION
JUNIO-AGOSTO 1996

CODIGO	ELEMENTO	DETALLES	COSTO U.S. $
	PERSONAL		
030	1. Coordinador	NP-02-01 $1,915/M X 3 Meses	5,745
390	2. Secretaria Administrativa	NA-04-01 $ 589/M X 3 Meses	1,767
390	3. Supervisor de Campo	NP-01-01 $1,210/M X 2 Meses	3,630
390	4. Médicos entrevistadores	CA-05-01 $ 538/M X 2 Meses	8,608
390	5. Chofer	CA-04-01 $ 444/M X 1 Mes	444
230	VIATICOS		2,220
230	TRANSPORTE	3,000 Kms X $ 0.30	900
550	SUMINISTROS		497
490	GASTOS DE OPERACION		1,000
390	ANALISIS DE DATOS		1,300
	Sub-total		26,111
	TOTAL EVALUACIONES		51,375

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(4) OPS/OMS. Manual de Encuestas en Establecimientos de Salud: Manejo de Casos de Diarrea. Programa Salud Maternoinfantil, Control de Enfermedades Diarreicas. CDD/SER/90.1. Washington, OPS/OMS, 1994.

(5) Dean, AG, Dean JA, Coulombier D, Brendek KA, Smith DC, Burton AH, Dicker RC, Sullivan K, Fagan RF, Arner, TG. Epi Info, Versión 6: a word processing, database, and statistics program for epidemiology on microcomputers. Centers for Disease Control and Prevention, Atlanta, Georgia, U.S.A., 1994.

APPENDIX E

Comments on Cost-Effectiveness Analysis
INCAP Long Distance Education Program in Cholera & Diarrhea

April 6, 1995

-- DRAFT --

The evaluation of the INCAP program will yield information on the change in key behaviors of participants brought about by the course. However, in order to translate these results into public health terms so that the benefits to the country can be estimated and so it can be compared to other training programs, a cost-effectiveness analysis must be done. In other words, the cost-effectiveness analysis will translate the evaluation into terms that are meaningful to governments and donors.

Costs. It is clear that the program has significant economies of scale. Therefore, the cost analysis needs to address cost as a function of the number of participants, as well as defining the actual costs for the program as implemented in 1995-96. Due to the conceptual difficulties inherent in defining overhead costs and the estimation of true marginal cost, a sensitivity analysis with cost ranges should be done. Costs and definitions of costs reported for alternative education programs should be sought out so that valid comparisons can be made.

Effects. Various types of effects will be measured during the evaluation, including outputs such as graduates and dropouts, provider-based quality of care such as percent improvement in cases diagnosed or treated appropriately by participants, and community-based quality of care such as percent of all diarrhea cases treated effectively or a decrease in inappropriate hospital inpatient days or inappropriate drug prescriptions. We will not have the data to estimate patient outcomes.

Linking Costs and Effects. The above information will allow us to estimate the cost of achieving various effects under different assumptions, and compare this estimate to other training programs (to the extent such information is available) and to other public health programs. Such estimates will not be exact, but will provide rough estimates under transparent assumptions that are meaningful.

Required Data. In order to make the above analysis, the following data is required from the program and program evaluation.

* Line item costs by country.
* Number of eligible persons, enrollees, and graduates by country.
* Absolute change in performance of key practice indicators due to program, as a function of diarrhea patients encountered.

Required Resources. Analyst for three weeks. Competent literature review. Access to INCAP staff who do the evaluation.