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SAVE THE CHILDREN

CHILD SURVIVAL 5 HEADQUARTERS PROJECT ANNUAL REPORT

October 1992 - September 1993

Cooperative Agreement No. OTR-0500-A-00-9149

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Save the Children
Child Survival 5 Headquarters Project
Cooperative Agreement OTR-0500-A-00-9149

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COOPERATIVE AGREEMENT NO OTR-0500-A-00-9149
CHILD SURVIVAL 5 HEADQUARTERS PROJECT
FY93 ANNUAL REPORT
(October 1, 1992 - September 30, 1993)

BACKGROUND

This annual report follows the 1993 Annual Report Guidelines for the First Annual Report of CSVIII projects distributed by AID/W in September 1993. Since these guidelines were written for field projects, they have been modified to correspond to our headquarters project.

The CS5 Headquarters five year project, (initiated 9/1/89) has two components:

1. **Technical Assistance:** to provide technical backstopping to CS5 field projects in order to upgrade the technical quality of the field programs. This technical assistance component is provided to all centrally funded CS programs to enhance the institutional health capacity of each implementing PVO.

2. **Special Project:** to develop and implement a computerized health information system, and to make the results available to other agencies; and to produce and transfer manuals, working papers, and other information within SC and to interested PVOs.

A midterm evaluation of the CS5 Headquarters Project was conducted from April 17 to May 24, 1992 with Dr. Nirmala Murthy as the team leader. The team visited field projects in Mali and Bangladesh and assessed reports at the SC Headquarters in order recommend directions for the further development of the manual and computerized health information systems. A second midterm evaluation, contracted by the AID/FHA/PVC Office, was conducted between December 14, 1992 and January 8, 1993. Richard Podol and Helga Morrow assessed the overall results of the project and made recommendations to AID/W on the use of CS funds to support Headquarters projects.

I. OVERVIEW OF YEAR FOUR

A. Actual Accomplishments

1. Technical Assistance

Funds were used to provide basic administrative support as well as at least one technical assistance visit to each of the ongoing CS5 country projects. Ongoing CS5 field projects include Malawi, Bolivia and Burkina Faso. Field projects in Sudan and Jakarta were completed earlier in August, 1992, so no visits were required. Assistance to the three ongoing field projects exceeded expectations. Please refer to Appendix 1 for a list of planned versus actual activities.

Malawi received a one year no-cost extension through August, 1993; the final evaluation was completed in August. Gail Snetro worked with the Malawi CS program team 9/29/92 - 12/19/92 to modify CS strategies in order to be responsive to the drought and the AIDS pandemic. Dr. Ahmed Zayan worked with the Malawi CS health team in Zimbabwe 4/23/93 - 5/3/93 to develop a more comprehensive field office health strategy. Dr. Loren Galvao led the Malawi KPC final survey team 7/5-23/93 and Dr. Lynn Franco led the final evaluation team 8/2-27/93. The final evaluation report will be submitted within 90 days after the end of the project (prior to November 30, 1993).

Bolivia's project received a seven month no-cost extension through March 31, 1994. Karen LeBan assessed the CS3 project (adjacent to the CS5 project) in Bolivia 1/10-27/93 and developed lessons learned and recommendations applicable to the CS5 project. Dr. Loren Galvao and Dr. Katherine Kaye worked with Lisa Howard Grabman, the Co-Field Office Director at the MotherCare TAG Meeting in Arlington, VA. 5/17-21/93 and at the ProMIS Conference at SC Headquarters 7/29/93 - 8/7/93.

Burkina Faso completed the fourth year of their five year project. Dr. Ahmed Zayan (12/9 - 21/92) and Fode Doumbia of the SC Mali Field Office (11/30/92 - 12/12/92) provided technical assistance to the CS5 project during a visit to assist with the CS8 Detailed Implementation Plan.

2. Special Project

2.A. ProMIS Development

At the beginning of the 1993 fiscal year, ProMIS had been installed and operational in four countries - Mali, Burkina Faso, Indonesia and Bolivia. In some cases, the system had been running for several years. The principal objective of FY93 was to assess the operation of ProMIS and make plans for its enhancement, if necessary; another objective was the installation of ProMIS in additional sites, as requested. The Mid-Term Evaluation report by Nirmala Murthy was a significant tool in achieving this assessment. At the end of FY92, as part of the mid-term evaluation, a workshop chaired by Nirmala Murthy was held among Westport-based staff to map out the desired enhancements to ProMIS. The second mid-term evaluation conducted by Richard Podol and Helga Morrow in January 1993 provided additional guidance. The activities achieved related to these two objectives are listed below. Please refer to Appendix 2 for planned versus actual activities related to the upgrading of the Health Information System, ProMIS.

ProMIS Enhancements Achieved During FY93

As a result of the mid-term evaluation reports and the conference, several specific initiatives relating to the enhancement of ProMIS were outlined. The balance of this section will be to detail the initiatives and their current state.

Export Facility:

One of the most requested enhancements to ProMIS is the ability to export data from the ProMIS system. Since ProMIS uses a standard dBase-type filing system, access to the data isn't difficult provided that the individuals needing the data have the required technical skills. Also, to provide fast access to the data, ProMIS uses several different files to store different types of data. For example, there is an immunization file for storing child immunization data and a growth file to store child weight data, etc. All of these files are tied together with ID numbers, which are unique for each individual enrolled in the system. For individuals unskilled in working with structured databases, collecting and aggregating data from these kinds of structured files could prove a daunting task. To facilitate this process, the SC MIS department was asked to design and build a software package capable of exporting all the data to a standard file, which could then be easily imported into Epi-Info, SPSS or any one of a number of software analytical tools. This program would request from the user what data they wanted, for example -- the specific geographical regions, age ranges, etc. In addition, it would be possible for the user to specify which health-related data they want, i.e. child immunization, pregnancy, etc.

This export facility was specified and completed during the year and is awaiting distribution as part of the ProMIS version 2 package. Version 2 will be tested in FY94 and distributed to all field offices currently using ProMIS between the first and second quarter of FY94.

Merge Capability

One limiting factor in the use of ProMIS is its inability to allow multiple computers to enter data into the same data set. This is particularly a problem in countries which don't implement ProMIS at the start of their family enrollment process and thus have a significant backlog of data to be entered. The MIS department was asked to solve this problem in some way and, together with the Health Unit, we decided to provide a method of transferring data from one computer to another. This method was a compromise, since the best way of providing this functionality would have been to develop a networked version of ProMIS. However, the cost of implementing a network in the field, along with the time it would have taken to develop the software, were factors in deciding to simply provide a transfer function.

This function is a stand-alone program that the user can run which asks what data (specified by geographic region) is to be transferred. The program produces a text file which can be transferred to another computer system. A companion program is then run which takes the data and adds it to the ProMIS system.

This exchange facility was specified and completed during the year and is awaiting distribution as part of the ProMIS version 2 package.

Additional Reports

The Health unit staff requested that the system be able to produce several more statistical reports. While some of these reports will not be available until the completion of the Generic Module, there are some that can be completed since they are based on data already collected.

The following are reports that will be completed and included in Version 2:
Age Specific Fertility Rates
Tetanus Coverage Rates
Pregnancy Statistics

Generic Module

The ability of a field office to define their own data items and link them to the health and demographic data was identified as being a useful capability to include in ProMIS. This capability evolved into what is now known as the Generic Module. This function will allow field staff to identify specific data items that can be attached to individuals who are enrolled in the ProMIS system. Some frequently mentioned examples include a module for economic development activities or literacy activities. Each Field Office will now be able to enter a date and a variable (such as participation in a training, participation in a women's savings group, etc) and have that information linked with health and demographic information.

This capability will be offered in two steps. First, the field office will use an external program to specify the characteristics of the data items to be included. The characteristics include the size of the data item, its type (numeric, date, character, etc.), etc. This program will then create the links to the main ProMIS program to be able to utilize the data files created. Then, when ProMIS is run these links will be established and the ProMIS software will be able to provide a method for storing and maintaining these data items.

This facility is a potentially very powerful method of allowing the field office staff to customize the system to their needs. This function forms the bulk of version 2 of ProMIS and is expected to be completed and tested by the end of the first fiscal quarter of FY94.

Additional ProMIS Installation in FY93

Ken Herman, a member of the SC MIS department, and Dr. Warren Berggren traveled to Haiti for one week (1/31/93 - 2/6/93) to install the system (in French) and train the staff. This installation was successful and the system has been working with very little trouble. The fact that the system was installed and the staff trained in such a short time continues to be a testament to the power and ease-of-use of the system.

ProMIS Information Transfer

For several days in June (6/20-23/93), the MIS department and Health Unit participated in the NCIH conference by demonstrating the system at a table in the exhibit hall. Representatives from many other organizations discussed the system and several expressed interest. Information on the system was distributed at the conference.

2.B Working Papers

In addition to ProMIS enhancement, several working papers were developed and distributed during FY93 according to plan. A list of these working papers can be found in Appendix 3.

B. Training Activities for Project Staff

In addition to the software enhancements to ProMIS, an important activity during the year was the convening of a workshop of ProMIS field staff in Westport, CT 7/29/93 - 8/7/93. The goal of the workshop was to transfer knowledge about the technical workings of ProMIS to the field office staff and to improve the data analysis capability within field offices. There were four countries participating in the workshop - Mali, Burkina Faso, Haiti and Bolivia- and each country sent two participants, a health specialist and an information specialist.

For three days the information specialists worked with the MIS Department to learn about how the files in ProMIS were constructed and linked as well as how to customize some of the workings of ProMIS. Health staff worked with Dr. Katherine Kaye, epidemiologist, to learn how to better assure the quality of data collected in ProMIS and how to use those data for program evaluation and operations research. During the last half of the week the information and health specialists worked together using the latest ProMIS data from their own programs, to study specific issues of concern within their field offices: e.g., neonatal mortality rates in

Bolivia, mortality among children born to adolescent mothers in Haiti. Please see Appendix 4 for a report of the ProMIS Workshop.

In addition, the Health Unit continued to work with regional groups of field offices to further develop and strengthen health program strategies and linkages between field based professional staff. A copy of the SC health strategy paper can be found in last year's annual report. Technical health issues as well as broader issues of scale, sustainability and program quality were discussed. The Health Unit participated in two such events: Dr. Ahmed Zayan and Gail Snetro facilitated the health component of a Southern Africa Sub-Regional workshop in Zimbabwe during the last week of April, 1993. Gail Snetro was based in the subregion during the first quarter of FY93 in order to work with and train staff in AIDS education. Dr. Katherine Kaye and Karen LeBan designed and facilitated an Asia Regional Health Workshop in Nepal May 2-6, 1993.

C. Technical Support Received:

No additional technical support was received at our Headquarters besides the guidance provided by the Midterm Evaluation Teams of Nirmala Murthy, and Richard Podol and Helga Morrow.

Project REACH trained Dr. Monica Ortega, SC Colombia Field Office Director, in ARI Management and Case Control. She has provided subsequently provided technical assistance in ARI to our Colombia and Bolivia child survival programs.

D. Health Committees: N/A

E. Linkages:

During the early part of FY93 in October, Dale Conlon of Conlon Associates visited SC to compare and contrast SC's ProMIS with the computerized information system developed by Conlon and used in Haiti. The SC MIS Department found ProMIS to have more functionality and flexibility. Some of the disadvantages of Conlon's system included: the system was not available in French; the system contained many levels of menus, which could translate into longer training times; and data entry staff needed to use an editing tool to manipulate the data in the files directly, without benefit of validation.

SC strengthened its connections with the Institute for Reproductive Health at Georgetown University with the plan to provide greater expertise and information to field programs on breast-feeding. Dr. Miriam Labbock and Kristin Cooney worked with SC Headquarters Staff on July 1, and Dr. Loren Galvao attended their conference on Breast-feeding as a Woman's Issue September 13.

Dr. Joe Wray from Colombia University was the final evaluator of our Bangladesh CS4 project. He is now using his nutritional expertise to assist the Health Unit in an analysis of the Bangladesh growth monitoring and supplementation program. He is advising Nazmul Khan and Dr. Katherine Kaye in their analysis of the effect our nutrition program has had on child malnutrition and mortality over a several year period.

Presentations on our child survival programs and linkages with other institutions were made at the APHA Conference (November 1992), NCIH Conference (June 1993), the NACHRI Conference (September 1993), Yale University, and WHO (September 1993). Please refer to the list of working papers for presentation topics.

Dr. Warren Berggren and Dr. Katherine Kaye served on the advisory committee of the Andean Rural Health Care Health Information Systems Group throughout this fiscal year. In addition, Karen LeBan was a member of the technical advisory group of the Helen Keller VITAP project.

F. Professional Staff

The following staff were totally or partially funded by CS5 during FY93:

Dr. Warren Berrgren, Director
Chris Burns, Technical Support Assistant
Dr. Loren Galvao, Primary Health Coordinator
Dr. Katherine Kaye, Epidemiologist
Dr. Ahmed Zayan, Primary Health Coordinator
Ken Herman, MIS Manager
Wendy Seiler, MIS Specialist
Zihan Tong, MIS Specialist
Gail Snetro, Health Advisor

The following additional two staff will be funded totally or partially during FY94:
Dr. Jim Sarn, Director
Nazmul Khan, Health Information Systems Specialist.
Please refer to Appendix 5 for a copy of their resumes.

II. CHANGES MADE IN PROJECT DESIGN

The project continues to proceed as planned. Due to the retirement of Dr. Warren Berggren in March 1993, and the restructuring of Save the Children during the 1993 calendar year, the budget was underspent during this year. Our anticipation is that all project funds will be expended during FY94 as an intensive year of activities are planned to meet all grant objectives and all new staff are in place.

III. CONSTRAINTS, UNEXPECTED BENEFITS, LESSONS LEARNED

A. Constraints

One technical problem encountered in the use of ProMIS was its inability to allow multiple computers for data entry. This constrained the amount of data that can be entered in a period of time.

While ProMIS has enabled field projects to keep computerized records of longitudinal data on individuals, we have not seen an increase in the data management capacity of the field office. Reports and records have been useful for immediate decision making, but field staff are already over stretched with project activities and do not have the time or the training to analyze the data for trends that would be useful in long range planning and decision making.

B. Strategies to Overcome Constraints

There were two strategies that could have been used to overcome the data entry dilemma. The first was to develop a networked version of ProMIS. The second was to develop software which could allow the merging of data from two data sets into one. The second strategy was chosen because of the constraints of time and funding. Developing a networked version of

ProMIS would have proven the more costly and time consuming of the two options. Furthermore, the installation of a network in the field would have proven to be costly and difficult, since the technical support required to operate a network was not in place.

The ProMIS Workshop was held in order to provide advanced training for field level staff in data analysis. The epidemiological notes were also written and distributed to all field staff to assist them in a better understanding of data manipulation procedures. The Health Unit also hired a Health Information Systems specialist who could work with field staff as needed; and who had time to devote to analyzing field data over time to see if child survival interventions made a significant difference in children's mortality and morbidity.

C. Unexpected Benefits

There was an unexpected benefit of selecting a merge facility over a networked solution. The merge facility now allows us to easily remove unused data from the ProMIS system. For example, if a village was once included in the project area, but for some reason is no longer included, then its data is no longer collected and updated. Having old data like this in the system will skew aggregate results unless care is taken to remove the data when calculating rates. The merge facility will allow the users to easily remove this data to an achieve, which can be added later on if needed.

D. Lessons Learned

Our Field Offices generally hire an information systems specialist as part of their child survival projects to manage data collected at the field level. Their routine tasks include data validation and consistency checks, both of which are time consuming. The CS Coordinator also spends the majority of his/her time in problem solving, immediate operational issues, and strategy design to achieve set targets.

In order to seriously analyze the information for trend and impact reporting, additional programming and research skills are required as well as well as quality time away from operational issues. A process for action research rather than target achievement needs to be prioritized. (The process of action research consists of data collection, diagnosis -- identifying gaps between what is and what ought to be, action -- planning and carrying out steps that you predict will improve things, and evaluation and re-diagnosis -- finding the new gaps).

The information systems specialist needs time and skills for tasks that include writing a program to extract data once variables are chosen, sorting and resorting data, writing an additional program in SPSS or other software to produce the necessary reports, analyzing the information, and then beginning the process again. In addition a health professional must work closely with the information systems specialist to set possible hypothesis, review the reports, compare the data to other known literature, write a technical analysis, and use the analysis in program design and planning.

Given the tight and constricted budgets of many of our health programs, this expertise needs to be sought through a headquarters or regional basis, or through other institutions. Staff perception of the importance and value of this information is critical for this type of analysis to become a priority. The hiring of additional staff is often seen as counter to steps taken to ensure project sustainability and is seen as raising the cost - benefit of the project; however, this type of analysis must be seen in the larger context of long-term sustainability (using the data to choose the most appropriate interventions and strategies), a multiplier effect as other organizations use the information themselves, and impact on policy.

IV. PROGRESS IN HEALTH INFORMATION DATA COLLECTION

Please refer to the two midterm evaluation reports for a summary of the Health Information System.

V. BUDGET AND EXPENDITURES

Please refer to Appendix 6 for the pipeline analysis. No major budget revisions were made during this period.

VI. FOLLOW-UP OF MTE REPORT RECOMMENDATIONS

A. July 1992 Midterm Evaluation Report Comments

The MTE report listed 6 recommendations, some of which have to do specifically with ProMIS. A response by the SC MIS Department to this evaluation report can be found in Appendix 7. The following list addresses each of the 6 recommendations.

1. If future projects choose not to implement health activities through home visiting, they will need to experiment with other alternative, cost-effective systems for reporting vital events. If routine household visits are not feasible, then a complete household survey once in two years seems necessary to at least maintain enrollment rates.

> SC is experimenting with a sentinel surveillance system in the Bangladesh CS8 project. Our Nepal CS7 and CS8 projects have decided to opt for option two, conducting complete household surveys every two years. Information on the success of this approach should be forthcoming next year.

2. ProMIS should have a built-in facility to export a specified number of data fields and records to other software programs for analysis. ProMIS must have the flexibility of adding new variables and giving new output tables.

> The export feature has been developed and will be available in version 2, due to be released during the first quarter of FY94.

3. Efforts to analyze data for evaluating program operations and new directions for development are needed. Periodic conferences of program managers could help in initiating such an effort.

> The ProMIS workshop held this year was an effort to enhance staff ability to analyze data for better program decision making.

4. It is premature to add non-health modules to ProMIS when even the health modules are not functioning satisfactorily.

> It was decided to add a generic module to ProMIS as earlier explained that would allow local health and non-health variables to be added.

5. At this stage it will be adequate if ProMIS adds a variable to indicate participation status of an individual in WCI (Women Child Impact Program) activities and enables the user to copy those records as separate DBase files.

This point recommends a method for field offices to link other data with the ProMIS data files. This recommendation is being addressed by MIS on two levels. First, the ProMIS technical workshop held in August, 1993 was designed to teach the technical staff in the field offices how to manipulate the data files in ProMIS. Part of this manipulation includes creating new files which can be linked to ProMIS. Second, the generic module currently under development will allow those field offices without the necessary technical expertise to accomplish the same tasks. The MIS department has therefore addressed this recommendation and gone beyond its mandate.

6. Incorporate input-output indicators required by SC and USAID. Do not sell this software commercially, as supporting software can be a demanding job for any organization.

This recommendation addresses many items. It makes the point that ProMIS can be useful to the Agency by including all the input/output indicators required by the Agency and USAID. It also points out that selling the software commercially should not be considered due to the system support structure that must be put into place. The MIS department has addressed the inclusion of additional indicators by providing a more comprehensive set of reports. Furthermore, the MIS department has never entertained the notion of selling this software commercially for the same reasons pointed out in the recommendation.

2. January 1993 Podol/Morrow Midterm Evaluation Report Comments

This report listed 9 recommendations -- three of which relate to SC and six of which relate to the PVC Office and JHU CS Support Program. The three which relate to SC are addressed here.

1. ProMIS be made available to all interested organizations on the understanding that further enhancement is in progress and linkages between SC's responsibility vis a vis the product and the respective organization needs to be worked out ahead of time. (PVC and JHU may have to become involved in this action.)

This recommendation can only be fulfilled upon completion of a protocol which details how ProMIS can be supported. SC will organize a meeting with AID and JHU during FY94 to discuss the feasibility of this recommendation. A protocol would need to include the method of training and installation as well as ongoing technical support.

2. Establish an independent working group to determine the merits and the weaknesses of ProMIS to determine its ultimate marketable value. This is to be funded by PVC/CSH.

This recommendation will be brought up at a meeting with AID and JHU in FY94. This could be considered as a component of the final evaluation.

3. SC experiment with other less personnel intensive models for its Health Information System and that information regarding experimentation be shared with parties concerned.

SC has begun to experiment with sentinel sites in Bangladesh, with reducing the number of paid workers in Mali, and with simplifying the manual information system in each of its other field offices.

VII. OTHER

A. FY94 Action Plan

Activities will continue as planned during this final year of the grant. The remaining field office projects (Bolivia and Burkina Faso) will continue to be backstopped and evaluated, ProMIS software will be finalized, additional working papers will be developed, and a final compendium of working papers will be produced for wide distribution. A plan for future backstopping and support of ProMIS will be developed. We will organize and implement a final evaluation of the grant in collaboration with AID/W.

B. Centrally Funded Child Survival Grants

During FY93, the CS5 Headquarters Grant was part of a larger institutional effort to increase SC's capacity to design, implement and evaluate integrated child survival programs. Please see Appendix 8 for a list of all central child survival grants received to date with an updated status of each and a Summary Sheet of expenditures per cooperative agreement.

CHILD SURVIVAL 5 HEADQUARTERS
IMPLEMENTATION OF DIP SCHEDULED ACTIVITIES*

APPENDIX 1

TECHNICAL ASSISTANCE TO FIELD PROJECTS

ACTIVITY	FY 90		FY 91		FY 92		FY 93		FY 94
	PLANNED	ACTUAL	PLANNED	ACTUAL	PLANNED	ACTUAL	PLANNED	ACTUAL	PLANNED
1. Countries Visited	5	4	5	5	5	4	3	3	3
2. Project & DIP Design	–	4	–	1	–	–	–	–	–
3. Selection of Health Personnel	–	2	–	3	–	–	–	1	1
4. Report Preparation	–	5	–	5	–	5	–	3	3
5. Technology from Networking	–	–	–	–	–	–	–	–	2
6. Implementation of HIS	–	4	–	1	–	2	–	3	3
7. Training & Orientation	–	5	–	5	–	5	–	3	–
8. Mid–term & Final Evaluations	–	–	–	4	–	4	–	2	4
9. Lessons Learned Conferences	–	–	–	–	–	1	–	–	1
10 Other	–	1	–	4	–	4			

*Taken from DIP and Annual Reports, supplemented by discussions with SCF HQ Personnel

CHILD SURVIVAL 5 HEADQUARTERS
IMPLEMENTATION OF DIP SCHEDULED AC' 'VITIES*

APPENDIX 2

UPGRADING OF HEALTH INFORMATION SYSTEM (ProMIS)

ACTIVITY	FY 90		FY 91		FY 92		FY 93		FY94
	PLANNED	ACTUAL	PLANNED	ACTUAL	PLANNED	ACTUAL	PLANNED	ACTUAL	PLANNED
1. Completion of Software Package for Demographic Core	X	X							
2. Testing in field office with manual system	X	X							
3. Testing in field office with computerized system			X	X					
4. Refinement of software package			X	X					
5. Orientation & Training in field offices			X	X					
6. Follow up support for field adaptation			X	X					
7. Evaluation & Refinement of system					X	X	X	X	X
8. Additional field installations					X	X	X	X	X

*Taken from DIP and Annual Reports, supplemented by discussions with SCF HQ Personnel

12

Health Unit Working Papers FY93

Child Survival

A Strategy to Improve Maternal and Neonatal Survival in Rural Bangladesh, Bangladesh FO, 11/1992 APHA presentation

The Application of RAP in the Investigation of Community-Based Health Management and VHW Sustainability in 12 Rural Villages, Panay Island, Philippines, Philippines FO, 11/1992 APHA presentation

Empowering and Improving the Health of Women in the United States and Overseas through a Community-Based Approach, Save the Children, a chapter from Global Learning for Health, Edited by Russell E. Moran, Jr. and Bill Rau, NCIH, 1993

Urban Health from the Perspective of a Non-Governmental Organization: Lessons Learned from a Case Study in Jakarta, Katherine Kaye, M.D., M.P.H., May 1993.

STD Treatment and Preventive Approaches: Findings from a Clinic in Rangunia Thana, Chittagong District, Bangladesh, Dr. Pushpa Bhatta, Nepal Health Research Council with technical assistance from Dr. Robin Biellik, WHO, Nepal, summary of an oral presentation given at the IX International Conference on AIDS, Berlin, Germany, June 1993.

A Healthier Environment: Outcome of Community Participation in the Construction of Potable Water Systems, Luis Amendola, M.D., ASCH (Honduras), NCIH presentation, June 1993.

Management Tools for Improving the Quality of Health Information in Systems Based on Full Enrollment and Sentinel Surveillance, Katherine Kaye, M.D., M.P.H., Loren Galvao, M.D., M.P.H., August 1993.

The Lot Quality Assessment: Evaluating the Quality of Save the Children's Health Information System in Malawi, Loren Galvao, M.D., M.P.H., Katherine Kaye, M.D., M.P.H., August 1993.

Epidemiology Review Notes, Katherine Kaye, M.D., M.P.H., August 1993.

The Use of Impregnated Curtains in Malaria Prevention in Mali, Dr. Ogobara Doumbo, National School of Medicine and Pharmacology, Mali; Dr. Steven Dolan, Malaria Research and Training Center, Mali; Peter Laugharn, Save the Children, Mali; September 1993.

A Study on the Impact of the Workshop on Family Planning Conducted with the Traditional and Religious Leaders in Nasirnagar Thana by Save the Children (USA), University Research Corporation/Bangladesh, Save the Children (USA)/Bangladesh, September 1993.

Health Care Services Utilization and Behavioral Pattern in Save the Children (USA) Catchment Areas, University Research Corporation/Bangladesh, Save the Children (USA)/Bangladesh, September 1993.

Participation in Women's Savings Groups and Implications for Health Care Behavior in Save the Children (USA) Catchment Areas, University Research Corporation/Bangladesh, Save the Children (USA)/Bangladesh, September 1993.

Health Unit Working Papers FY93

AIDS

A Rapid KABP Survey for Evaluation of NGO HIV/AIDS Prevention Projects, Mary Anne Mercer, The Johns Hopkins University; Nicola Gates, Save the Children/US; Martha Holley; Linile Malunga, Save the Children/Zimbabwe; Richard Arnold, 1992

Health Unit Manuals FY93

MotherCare

Traditional Birth Attendant Training Programme, MotherCare/Save the Children-Bangladesh, December 1992

The "Autodiagnostico": A methodology to facilitate maternal and neonatal health problem identification and prioritization in women's groups in rural Bolivia, Lisa Howard-Grabman, MotherCare/Save the Children-Bolivia, March 1993

Salud Reproductive: Manual para parteras comunitarias, MotherCare/Save the Children-Bolivia/CIEC, 1992

ProMIS WORKSHOP

August 2-6, 1993

Cooperative Agreement #OTR 0500-A-00-9149-00

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Agenda: ProMIS Workshop

Health Section

Monday

8:30 - breakfast in Lily Conference Room (breakfasts will be taken by MIS and Health people together).
9:00 - introduction to Health Unit and MIS staff, other members of PSD departments, and regional staffs; tour of home office
10:00 - Basic Epidemiology: population pyramids; how to investigate epidemics; measures of central tendency and basic statistical tests
12:30 - lunch (during these lunch hours, we will schedule individual meetings between conference participants and those Health Unit staff who cover their region as well as regional office staff).
1:30 - 5:00 Describing the health status of populations using ratios, proportions and rates; adjustment of rates

Tuesday

8:30 - breakfast
9:00 - Analytic Epidemiology: ecologic, cross-sectional, case control and cohort studies
12:00 - lunch
2:00 - controlling for confounders: examples of studies on Women's
5:00 - Savings Groups
6:00 - group dinner in Westport

Wednesday

8:30 - breakfast (breakfast and morning session will be in Health Unit)
9:00 - review of manual HIS: supervision required to keep data up to date; Lot Quality Assessment techniques; Example: checking data generated by ProMIS against expected rates--what happens when supervision is inadequate
12:00 - 1:00 lunch
1:00 - Health and MIs people discuss problems encountered in transfe..ing manual HIS data to ProMIS and how to resolve problems
4:30 - group tour to New York City

Practicum Session

Thursday

8:30 - breakfast
9:00 - reviewing study designs for which ProMIS data will be used
12:00 - 2:00 lunch
2:00 - 5:00 generating ProMIS data needed for practical study

Friday

8:30 - breakfast
9:00 - analyzing ProMIS data generated for practical study and reporting results

12:00 - lunch
2:00 -
2:00 - discussing any problems encountered in conducting study and how they were resolved

ProMIS Section

Topics to be covered with MIS representatives during the first two and one-half days of the conference are as follows:

* Overview of ProMIS from the user's perspective
* Overview of ProMIS from the technician's perspective looking inside
* Detailed look at the data files used by the ProMIS software
* Retrieving data from the ProMIS data files using dBase programming
* Creating new data files and linking them to the ProMIS system
* Customizing ProMIS: Changing the parameters that make ProMIS work
* New features in Version 2

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EXECUTIVE SUMMARY

The purpose of the ProMIS workshop was to improve data analysis capability within field offices which have computerized their community-based health information system using the ProMIS program. The four Save the Children field offices which now use ProMIS are Bolivia, Burkina Faso, Haiti and Mali. Each of these offices sent to the workshop two staff members--the health program director and the specialist in management information systems.

MIS specialists spent the first two days of the conference working with Westport-based MIS staff to learn how to better manage the technical aspects of ProMIS, including the exporting of data from ProMIS into such statistical programs as SPSS. Health staff worked with the Westport-based epidemiologist to learn how to better assure the quality of data collected in ProMIS and how to use those data for program evaluation and operations research. During the last three days of the workshop, MIS and health specialists worked together, using the latest ProMIS data from their own programs, to study specific issues of concern within their offices: e.g., neonatal mortality rates in Bolivia, mortality among children born to adolescent mothers in Haiti.

In meetings with health staff, it was emphasized that ProMIS is based upon a manual system of full community enrollment and periodic monitoring of target groups (usually children younger than five years and women of reproductive age). Thus, the data collected within ProMIS can be only as good as the data which are collected in the manual system: if schedules of home visiting have fallen off, population-based rates generated by ProMIS will be inaccurate. The manual health information systems currently used by the four field offices were reviewed in terms of methods for enumeration of all community residents, on-going monitoring of target groups, feedback and analysis of information collected, and supervision of village health workers.

Numerators and denominators needed to calculate commonly used rates were reviewed, as were techniques to assess the quality of data collected (Lot Quality Assurance techniques for checking information contained in the rosters of village health workers; small area rate charts for checking the consistency of vital events rates generated by ProMIS).

Statistical tests and designs for retrospective and prospective epidemiologic studies were also reviewed. While the ProMIS program itself is designed for program management and has no intrinsic statistical capacities, it is now possible to export data from ProMIS to such statistical programs as SPSS: as field office staff can now conduct more rigorous epidemiologic studies, it is important that they be able to plan such studies at the outset of a program.

During the practicum session of the workshop, health and MIS staff discussed ways in which ProMIS could be made an even more effective management and analytic tool. Suggestions included the following:

1. ProMIS should have the capacity to generate the following reports, according to specified geographic areas and time periods:
   a. reports on pregnancy outcomes
   b. reports on prenatal care
   c. summaries of numbers of in- and out-migrants

d. reports to facilitate "quality control" checks on data: e.g., comparing pregnancy outcomes to numbers of reported births; comparing causes of death to numbers of reported deaths

2. ProMIS should include a menu which specifies linkage of variables from mothers' and children's records: e.g., comparison of children's nutritional status according to mothers' involvement in income generating activities. ProMIS users should be able to link mothers' records to those of their biologic children as well as to those of other children living in their households.

3. ProMIS users should be able to export all vital events data (including data on in- and out-migration) along with health data.

4. ProMIS users should be able to specify variables which they wish to collect at the household level, according to the needs of their projects.

5. A "ProMIS User's Manual" should be compiled, to assist health program directors in using ProMIS data for epidemiologic studies.

Westport-based Health Unit and MIS staff are in the process of modifying ProMIS according to these suggestions, as they agree that such modifications will make the program a more flexible management and research tool.

EPIDEMIOLOGY REVIEW NOTES

Katherine Kaye, M.D., M.P.H.
Epidemiologist, Health Unit

ProMIS Workshop
August 2-6, 1993

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INTRODUCTION

Why Everyone at Save the Children Should Know Some Epidemiology

Epidemiology is best defined as "the study of the distribution and determinants of diseases and injuries in human populations." Epidemiologic methods have historically been used to investigate sources and transmission of infectious diseases: John Snow's elucidation of the source of a cholera epidemic in nineteenth century London--long before the bacterial etiology of the disease was known--is a classic. It should be noted, however, that even in the early 1900's epidemiology was used to determine the causes of some diseases that were NOT infectious--for example, nutritional disorders. Today, epidemiologic techniques are widely used to study cancer and heart disease as well as the spread of drug abuse. While epidemiology has entered the laboratory to inform the design of valid clinical trials, it remains above all a tool for field-based researchers and service providers.

Both descriptive and analytic epidemiologic techniques are essential to our work: only by knowing the distribution of diseases in a population can we appropriately allocate resources towards prevention and treatment; only by better understanding those factors which cause and transmit disease can we design effective preventive interventions; and finally, only by evaluating our work honestly, through a combination of epidemiologic and qualitative techniques, can we know what to keep and what to discard. Here we should note that epidemiologic techniques may just as well be applied in anthropology and in other development sectors as in health.

It is the tools of descriptive epidemiology--frequency distributions, proportions, rates--which allow us to conduct needs assessments and describe the impact of disease on a population. In order to compare and evaluate the effectiveness of our interventions, we use the tools of analytic epidemiology--ecologic, cross sectional, case/control and cohort studies. Finally, to determine whether differences between groups--for example, groups receiving different interventions--are greater than would be expected by chance alone, we need some knowledge of biostatistics.

DESCRIPTIVE EPIDEMIOLOGY

I. With what type of variables are we working?

Before considering the methods by which data may be described and analyzed, we must think about the nature of the variables to be examined.

A. Continuous or Discrete Variables

A continuous variable may have an infinite number of possible values along a continuum; examples include height and weight. Discrete data are not continuous and fall naturally into categories; an example might be "diseased/not diseased".

B. Variables Related to Person, Place and Time

If information is available about all three of these variables, the distribution of disease in a population can be described very well. Variables related to "person" include age, sex, socioeconomic status, and presence or absence of disease.

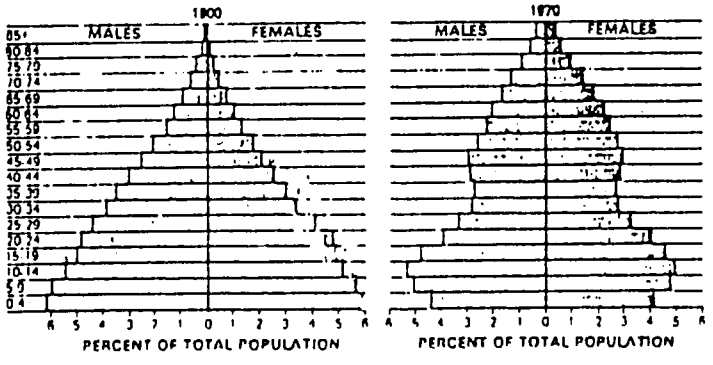
II. How are frequency distributions used to describe data?

A frequency distribution is a "complete summary of the frequencies of the values of a measurement made on a group of persons [which] tells either how many or what proportion of the group was found to have each value (or each range of values) out of all the possible values that the quantitative measure can have." Data composed of discrete variables fall easily into frequency distributions; when working with data composed of continuous variables, we sometimes arrange the data into arbitrarily chosen groupings (i.e., placing children's weights into "malnourished" and "not malnourished" categories). Two types of commonly used frequency distributions which will be described here are population pyramids and epidemic curves.

A. Population Pyramids

A population pyramid is a "graphic presentation of the age and sex composition of the population. The population pyramid is constructed by computing the percentage distribution of a population, simultaneously cross-classified by sex and age...A population whose pyramid has a broad base and narrow apex may be identified as a high fertility population."

The following pyramids illustrate the distribution of the United States population in 1900 and 1970; they could also represent pyramids for developing and developed countries today:



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1. Influence of Fertility Rates on Pyramid Shape

The most important influence on a population's age distribution is the fertility rate: other less influential factors are mortality and migration rates. By illustrating the distribution of persons in younger age groups, the pyramid provides information about future population momentum (the tendency for the number of births to continue increasing despite a fertility decline because of an increase in the number of women reaching childbearing age): thus, population pyramids are useful in planning delivery of current and future health care services, but should be interpreted with great caution if used to evaluate family planning programs.

2. Expected Population Percentages

Population percentages that may be expected in pyramids of developing countries for a few key age/sex groups are as follow:

women aged 15 to 49 years:	20%
children under five years:	16-20%
children under two years:	8-9%
children under one year:	3-5%

When populations are enrolled in our health information systems, it is advisable to check percentages recorded against those expected: under-enumeration of infants and young children is a common phenomenon.

B. Epidemic Curves

An epidemic is "the occurrence in a community or region of cases of illness, specific health-related behavior, or other health-related events clearly in excess of normal expectancy"; note that "...a single case of a communicable disease long absent from a population or first invasion by a disease not previously recognized in that area requires immediate reporting and full field investigation; two cases of such a disease associated in time and place may be sufficient evidence to be considered an epidemic." An epidemic curve--a "graphic plotting of the distribution of cases by time of onset"--is a type of frequency distribution. Examination of an epidemic curve can help us 1) determine whether disease transmission is from exposure to a single source or propagated from case to case and 2) if incubation periods of possible causes are known, identify the cause of the epidemic.

Given the frequent outbreaks of water-borne and other infectious diseases in our impact areas, it is important for our field office staffs to know how to investigate epidemics.

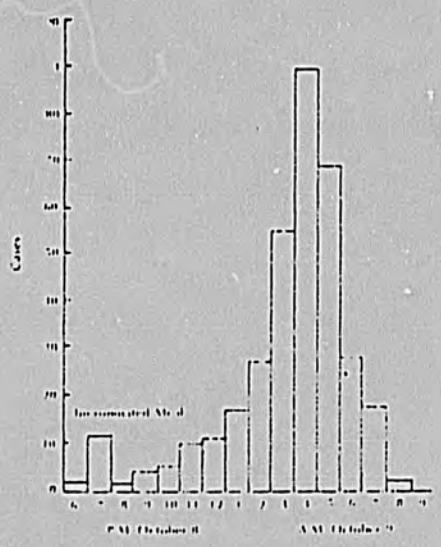
1. Common Source Epidemics

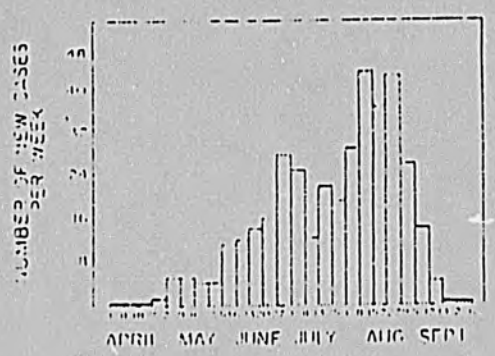
Common source epidemics refer to disease outbreaks which are caused when a population is exposed at one point in time or over a longer period to a common agent. In a point source epidemic, exposure to the agent is brief and simultaneous and resulting cases all develop within one incubation period; the incubation period can be determined from this type of epidemic curve by determining the time by which 50% of cases have occurred. Rapid rise and fall of an epidemic curve suggests exposure to a point source. Outbreaks due to food poisoning or toxic industrial exposure usually result in this type of curve.

2. Propagated Epidemics

Propagated epidemics refer to disease outbreaks caused by transmission of an infectious agent from one susceptible host to another, either through direct person-to-person transmission (e.g.,hepatitis) or through more complex cycles involving vectors (e.g., malaria). The upward slope of a propagated epidemic curve rises more gradually than that of a point source epidemic curve because new cases continue to develop beyond one incubation period as cases come into contact with more and more susceptibles--until the supply of susceptibles is exhausted or disease spread is prevented by health care interventions.

Following are illustrations of common source and propagated epidemics:





3. Curve Shape--Not Always an Easy Hint

The information provided by the shape of an epidemic curve may sometimes not be so straight-forward: if the outbreak results from continuing exposure to a single source (e.g., continuing use of contaminated water), if secondary cases develop, or if an incubation period is long and variable, the slope of the "point source" epidemic curve may be much more gradual; likewise, when a disease is very infectious and has a short incubation period, person-to-person transmission may be illustrated by a rapidly rising and falling epidemic curve--resembling that seen in a point source epidemic. Fortunately, the geographic distribution of cases also offers a clue to the nature of an epidemic: propagated epidemics are more likely than those resulting from point source exposure to spread geographically.

4. Investigating an Epidemic

Important steps in investigating a reported epidemic include

a. verifying that the disease which is being reported as "epidemic" has been correctly diagnosed

b. verifying that an excessive number of cases are occurring

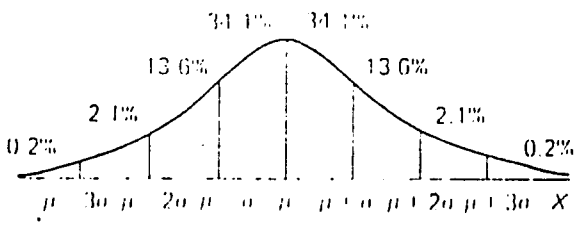
c. describing the epidemic with respect to time, place and person

d. formulating and testing hypotheses about possible sources of the epidemic; (testing usually requires some form of case/control study)

e. developing, implementing and evaluating interventions designed to eliminate the source and/or transmission of disease.

III. What are measures of central tendency and variation, and how are they used to describe data?

Measures of central tendency and variation (or dispersion) are used to describe how closely normally distributed continuous data cluster around a central mean. In a normally distributed population, mean, median and mode refer to the same value. The following curve illustrates a normal distribution and the percentages of the population that fall within one, two or three standard deviations of the mean:



A. Measures of Central Tendency

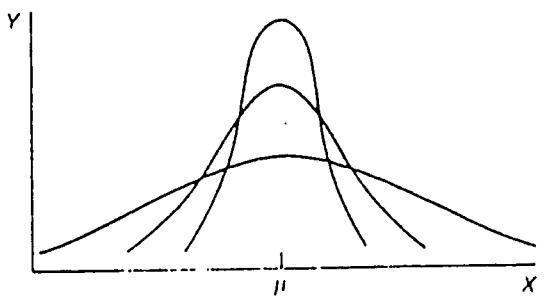
1. mean--a simple average. For a set of n values, the mean ($\bar{x}$) is expressed as $\bar{x} = 1/n$ S, where S refers to the summation of all the values.

2. median--the middle-ranking number in a set of n values which are ordered sequentially; if n is an even number, the median is generally taken to be the average of the middle two (e.g., in the array 2,3,3,4,7,8,9,14, the median is 5.5). Note that the median marks the 50th percentile.

3. mode--the most frequently occurring value in a set of observations.

B. Measures of Dispersion (Variation)

Different sets of data may have the same mean yet vary considerably in their distribution around it, as is seen in the following diagram:



The following indices describe such variation; for each, the greater the variety between data points, the higher the value of the index:

1. range--the difference between the largest and smallest of a set of values.

2. variance--the sum of the squares of the differences between the mean and each value in the data set, divided by the number of degrees of freedom in the set of observations. In a set of n observations $x, x_1, \ldots x_n$ with a mean $\bar{x}$, the variance (s) is calculated as $s^2 = 1/(n-1)(x - \bar{x})^2$
The degree of freedom here is one less than the number of data points (n-1).

3. standard deviation (s)--the square root of the variance

C. Example:

A data set consists of the following five measurements: 5, 15, 15, 20, and 45. The mean or average of these measurements (x) = 20.

In order to calculate the variance, for each measurement we need to calculate $(x - \bar{x})^2$:

$(x - \bar{x})$	$(x - \bar{x})^2$
5-20 = -15	225
15-20 = -5	25
15-20 = -5	25
20-20 = 0	0
45-20 = 25	625

The sum of $(x-\bar{x})^2$ is 900.
In order to find the variance, this sum is divided by the degrees of freedom (n-1 = 4): 900/4 = 225.

The standard deviation, s, is $\sqrt{225} = 15$.

It is important to have some understanding of standard deviation because, as we will see later, it is the index we use when we try to determine whether the means of two samples (e.g., groups who have received two different health care interventions) differ from each other in a statistically significant way. Intuitively you can see that the greater the variation between the data points in the two samples--hence the larger the standard deviations of these samples--the more difficult it is to prove that the samples truly differ from one another, even if they do have different means: if the standard deviations of both samples are large, it is more likely that their means differ from one another only by chance.

IV. How can we describe the health status of populations using ratios, proportions and rates?

A. Ratios

A ratio is "an expression of a relationship between a numerator and a denominator where the two usually are separate and distinct quantities, neither being included in the other", e.g.,male/female ratio. Note that at least one "rate" commonly used in public health is in fact a ratio: the maternal mortality rate expresses the number

of maternal deaths per 1000 live births; in this case, the numerator is clearly not a subset of the denominator.

B. Proportions

A proportion is a type of ratio in which the numerator is included in the denominator. One of the most important proportions used in public health is disease prevalence.

$$\text{prevalence} = \frac{\text{number of existing cases of disease in a population at a given time}}{\text{total population at that time}}$$

Prevalence of a disease is determined by two factors: the number of people who have contracted the disease in the past (previous incidence) and the duration of their illness (prevalence=incidence x duration). It is important to determine disease prevalence in assessing a population's need for health care and in planning adequate service capacity. Note, however, that prevalence does NOT convey the risk which an individual may have of contracting a disease: the denominator does not include persons at risk for the disease and there is no time factor; to convey the magnitude of individual risk, we rely on incidence rates.

C. Rates

A rate is a proportion that includes a specification of time. It is expressed as number of events in a specified period

population at risk for those events in that period x k

where k is a factor (usually 1000) that allows conversion from an awkward decimal to a whole number that is easier to handle.

1. Incidence and Vital Events Rates

An incidence rate may be defined as the number of NEW cases of disease in a population at risk over a period of time.

Because the entire population may be considered at risk for certain vital events, some vital events rates (e.g., crude death rates) are really measures of incidence. A vital events rate refers to the number of births, deaths or in/out migrations in a total population over a period of time.

* Incidence rather than prevalence is the measure used to investigate etiology or evaluate preventive interventions.

* When calculating disease incidence in large populations, it is not customary to correct the denominator by removing those not at risk.

* The denominator should consist of the population at the midpoint of the period covered in the rate--the average of populations at the beginning and end of the period.

* If members of a population are observed for different periods of time, a person-time unit (e.g., a person-year) is created to weigh properly each person's contribution of events in the numerator.

* In the numerator, it is important to differentiate between number of events or number of persons who experience the event (e.g., number of colds vs. number of people who developed a cold).

* For events that occur relatively rarely in a given population (e.g., maternal deaths, some diseases), the time period over which a rate is calculated should be long enough to avoid great fluctuation in the numerator. (i.e., In most areas, so few maternal deaths occur in one year in a population smaller than 100,000 that the calculation of maternal mortality only for that population would show great fluctuation from year to year.)

a. Crude Birth and Death Rates and their Adjustment

$$\text{crude birth rate} = \frac{\text{number of births in one year}}{\text{midyear population}} \times 1000$$

$$\text{crude death rate} = \frac{\text{number of deaths in one year}}{\text{midyear population}} \times 1000$$

These rates are called crude because they do not reflect a population's age distribution: an older population is likely to have a higher death rate than a younger one even if its environment is more salubrious. The process of adjustment allows us to overcome this problem and compare rates (usually death rates) between different populations. Adjustment may be direct or indirect.

i. Direct Method

With the direct method, age-specific rates which have been calculated in two or more study groups are applied to a reference population of known age structure: two or more death rates are then calculated for the reference population, with the numerator being the number of deaths which would occur in the reference population if the age-specific rates observed in the study groups had prevailed.

ii.Indirect Method

This method is used if the age-specific rates in a study population are unknown. Known age-specific death rates from a larger population are applied to the study population, and the number of deaths which would be expected in the study population if these age-specific rates actually prevailed is compared to the number of deaths observed. This comparison yields a standardized mortality ratio (SMR).

$$\text{SMR} = \frac{\text{observed deaths}}{\text{expected deaths}}$$

Much valuable information may be lost in adjustment because the process results in an artificial, summary rate.

b. Age-Specific Death Rates

More information is conveyed by age-specific death rates. It is this type of rate that we follow most closely in our health programs.

$$\text{age-specific death rate} = \frac{\text{number of deaths in a given age group in one year}}{\text{midyear population in that age group}} \times 1000$$

i. Age-Specific Death Rates whose Denominators are Live Births

Several age-specific death rates related to children and one related to women have as their denominator the number of live births in a year rather than a midyear population:

Infant Mortality Rates

$$\text{infant mortality} = \frac{\text{number of deaths in one year among children younger than one year}}{\text{number of live births in same year}} \times 1000$$

In order to avoid significant yearly fluctuation in the infant mortality rate, it is recommended that this rate be calculated for populations larger than 10,000 or that deaths be aggregated over several years; (the problem with aggregation, however, is that conditions affecting the risk of death are more likely to change over periods longer than one year).

The infant mortality rate has two components--neonatal and post-neonatal mortality. Post-neonatal mortality reflects mostly the effect of infectious and environmental factors. Neonatal mortality, especially mortality in the first seven days of life, is influenced by factors related to maternal health and delivery as well as infectious and environmental problems. (It should be remembered that tetanus is most likely to lead to death in the neonatal period, usually affecting infants aged 8 to 15 days.) Neonatal mortality accounts for 20 to 60% of all infant mortality: it is likely to be closer to 60% in developed countries, where infants are less likely to be exposed to infection and factors such as prematurity become more prominent.

$$\text{neonatal mortality} = \frac{\text{number of deaths in a year of children younger than 28 days}}{\text{number of live births in the same year}} \times 1000$$

$$\text{post-neonatal mortality} = \frac{\text{number of deaths in a year of children aged older than 28 days but less than one year}}{\text{number of live births in the same year}} \times 1000$$

Under-Five Mortality Rate

One mortality rate which applies to older children also has as its denominator the number of live births:

$$\text{under-five mortality rate} = \frac{\text{number of deaths in a year among 0-5 year old children}}{\text{number of live births in the same year}} \times 1000$$

Note that the under-five mortality rate includes the infant mortality rate and therefore 1)may be directly compared to it and 2)is always greater.

Maternal Mortality Rate

As mentioned earlier, this rate is really a ratio:

$$\text{maternal mortality rate} = \frac{\text{number of pregnancy-related deaths in one year}}{\text{number of live births in the same year}} \times 1000$$

For populations smaller than 10,000, maternal mortality rates cannot accurately be calculated unless deaths from several years are aggregated. If this is impossible, then a useful proxy is a sex- and age-specific death rate:

$$\frac{\text{number of deaths among women of childbearing age (15-44 or 49 years)}}{\text{average midyear population of women of child-bearing age}} \times 1000$$

ii. Age-Specific Death Rates whose Denominators are Live Births AND Fetal Deaths

Two death rates have as their denominators a combination of live births and fetal deaths:

$$\text{perinatal mortality rate} = \frac{\text{number in one year of fetal deaths 28 weeks or more in gestation plus deaths among infants younger than 7 days}}{\text{number of live births and fetal deaths in same year}} \times 1000$$

$$\text{fetal death rate} = \frac{\text{number of fetal deaths in one year}}{\text{number of live births and fetal deaths in same year}} \times 1000$$

It is important to understand that stillbirths are only included in the perinatal and fetal death rates--NOT in the neonatal rate. A stillbirth is defined as a child who does not breathe or show any sign of life after birth; generally, stillbirths refer to fetuses aged 28 weeks and older in gestation and miscarriages to fetuses younger than 28 weeks. Inclusion of stillbirths in the neonatal rate will falsely increase it. However, if the infant or neonatal rate is LOWER than expected in a given area, it is advisable to investigate how stillbirths are being recorded: sometimes liveborn infants who die very soon after birth are mistakenly recorded as stillbirths and are not included in the calculation of infant mortality.

iii. Age-Specific Death Rate whose Denominator is a Midyear Population

One age-specific death rate related to children has as its denominator a midyear population.

$$\text{child death rate} = \frac{\text{number of deaths in one year among children aged 1-4 years}}{\text{midyear population of children aged 1-4 years}} \times 1000$$

If ascertainment of births is faulty, this may be a more reliable measure of preventable child deaths than the under-five mortality rate. Unlike the under-five mortality rate, however, this one cannot be directly compared to any infant mortality rate--it has a different denominator.

c. How to Evaluate Infant Mortality Rates Generated in a Health Information System

It is the rates generated by our health information systems which allow us and the members of the communities we serve to monitor and evaluate the effectiveness of our health interventions. We can evaluate the success of our interventions by considering changes in health indicators over time and/or by comparing indicators in our intervention areas to those which exist in areas where we have no program. Even in the best of situations, the institution and maintenance of a Health Information System demands much effort on the part of field office staff: community health workers must be trained in collecting and recording data, and supervisors in reviewing these data and summarizing them in a format useful for program management and evaluation. If all this effort is to bear fruit, it is essential to ensure that data collected at the most basic level--the household--are complete and accurate. Any health program coordinator and community health worker supervisor should be able to validate health data collected in his or her impact area by comparing rates generated for the area to national or district rates in a way similar to that outlined below.

Example

After managing for two years a child survival program which has included promotion of tetanus immunization and breastfeeding and the establishment of an HIS, a Health Program Coordinator would like to determine whether there has been an improvement in infant mortality in his impact area. He finds to his dismay that the Baseline Survey which was done three years ago did not report infant deaths and was conducted on a sample of residents who were not representative of the general population. Instead, he decides to compare the 1989 infant mortality rate generated by his impact area's HIS to the national rate published in Unicef's 1991 State of the World's Children. He expects that even after two years of health interventions, this rate will still be higher than the national rate: his impact area is very poor and started out with health indices which were much worse than those anywhere else in the country.

He finds that there were 290 births in 1990 and 14 deaths among infants under than one year old, yielding an infant mortality rate of 48 deaths per 1000 live births. He is shocked to see that his rate is much lower than the national rate, 73 deaths per 1000 live births. (Based on the recorded number of births in his area, if the national infant death rate had prevailed he would have seen 21 infant deaths in 1989.) He doubts that his Child Survival interventions could have made this great a change in such a short time. He begins to suspect that something might be going awry in the Health Information System.

What could cause an Infant Mortality Rate to be falsely low? The denominator--the number of births--could be falsely HIGH. More obviously, the numerator--the number of infant deaths--could be falsely LOW. The Health Program Coordinator decides not to simply accept the more obvious explanation, but to do a little more investigation.

Using information collected on the family enrollment cards, he counts the midyear 1989 population in his impact area: 16,500. Based on the number of live births recorded in his area in 1989 (290), the crude birth rate would be 18 births per 1000 population. The Health Coordinator is appalled to see that this too is lower than the national crude birth rate, 28 births per 1000 population: he knows that family planning has not yet won much acceptance in his area. If national crude birth rates had prevailed in the area, he would have seen 462 births in 1989.

It appears, therefore, that births were under-reported in his impact area last year. If anything, this falsely low number of births should have driven UP the infant mortality rate in his area. Our Health Program Coordinator might not have been so surprised by this under-reporting of births if he had constructed a population pyramid based on the numbers of individuals recorded in the family enrollment: he would then have seen that the proportion of under-one year olds (1%) was much lower than the 3-5% expected. (It is important to bear in mind when calculating crude birth and death rates that such relatively small errors in the denominator--the general population--will not affect the rates nearly so much as errors in the numerator--numbers of births and deaths.)

The Coordinator would also have noticed something wrong if he had compared the number of pregnancies recorded in his impact area's pregnancy register against the number of live births: he would have seen that the number of pregnancies greatly exceeded the number of births (though the number of pregnancies was still not high enough to yield the number of live births that could be expected--another case of under-reporting).

It is clear to the Coordinator that in the face of a falsely low infant mortality rate, this under-reporting of births suggests an even greater under-reporting of infant deaths. With an expected number of live births equal to 462, he would have expected to see 34 infant deaths if national rates had prevailed in his area.

He begins to investigate at the community level possible reasons for such under-reporting. To his chagrin, he discovers that community health workers are NOT doing home visits every three months, as they were originally instructed. Moreover, when they do visit a home where an infant death has occurred, they feel uncomfortable enquiring and recording information about it; they also tend not to enquire about the status and outcome of pregnancies. In the process of perusing the pregnancy register, our health program coordinator notes a startling fact: 10% of the pregnancies are reported as ending in stillbirths. This seemed unusually high. He asks some community health workers how they define stillbirth and learns that they include infants who die very shortly after birth in this category: the failure to include these liveborn infants in the calculation of infant death rates leads to a false lowering of the rate.

The Health Program Coordinator begins to develop a plan of action for addressing this problem. This includes the following steps:

1. explaining to village health workers that home visits are the bedrock of our HIS: without reliable information on vital events and health status and practices among members of a household, Save the Children (and the community) will have no way of knowing whether or not anyone has benefited from health interventions;

2. developing an on-going system for feeding back information on community health status to those who collect the raw data--thereby allowing them to assess the completeness of their data collection as well as the success of interventions;

3. improving the ability of community health workers to enquire about and record information on infant death and pregnancy;

4. clarifying the definition of stillbirth and emphasizing that stillbirths should not be included in the calculation of infant and neonatal mortality rates, but that infants who are liveborn and die shortly after birth certainly ARE included in the calculation of these rates;

5. ensuring that the pregnancy register is kept up-to-date and includes a column for recording the outcomes of all pregnancies--miscarriages, abortions and stillbirths as well as live births;

6. instituting quality assurance checks on HIS data using Lot Quality Assessment techniques; periodic comparison of birth and pregnancy registers; and periodic surveys to check household enrollment.

Following is an example of a tool which the Health Coordinator develops to help CHW supervisors: he uses national rates to develop a table of expected numbers of births and deaths. (He knows that much year-to-year fluctuation may be observed in infant mortality rates for populations smaller than 10,000, but decides that such small area rates will be a useful tool for management: supervisors will better be able to assess the completeness with which vital events are reported.)

1989 national crude birth rate: 28 births per 1000 people
1989 infant mortality rate: 73 infant deaths per 1000 live births

Total impact area population of 16,500 is divided between 5 communities as shown below:

community	population	live births yearly (expected)	infant deaths yearly (expected)	births expected in 6 months	deaths expected in 6 months
1	3300	92	7	46	3-4
2	3600	101	7	51	3-4
3	3000	84	6	42	3
4	2000	56	4	28	2
5	4600	129	9	65	4-5

The Health Program Coordinator is concerned not only about the completeness of recording vital events but also about the quality of information about those events. He realizes that the calculation of neonatal mortality rates requires knowledge of the AGE at death and that recognition of the most important causes of infant mortality requires specification of cause of death. Consequently, he sets aside part of the general death registry to be a special infant death registry: he instructs community health workers that the age of infants who die before their first birthday should be recorded in days if they are younger than one month and otherwise in months.

He also instructs them to record information about cause of death: with help from some people with medical training, he develops a list of symptoms that community health workers can use to elicit from parents various common causes of death; he also instructs community health worker supervisors to visit homes where infant or child deaths have occurred to verify the cause of death given by parents and compare this cause to that recorded by local authorities (if such registries are available). For special studies on cause of death, he seeks advice on constructing verbal autopsy questionnaires.

The results of his investigation make the Health Program Coordinator realize that the Health Information System is not something that can be initiated and then left to run on its own: it requires constant maintenance, best delivered in the form of information validation and feedback.

d. Cause-Specific Death Rates, Proportionate Mortality Ratio and Case-Fatality Rates

i. Cause-Specific Death Rates

A cause specific death rate expresses an individual's risk of dying from a particular disease; because numbers of deaths from specific causes are usually much lower than total numbers of deaths, this rate is usually multiplied by 100,000 instead of 1000. Note that death rates can be both cause- and age-specific: for example, it may be helpful to know whether adolescents have a greater risk than persons aged 25-40 years of dying from homicide.

$$\text{cause-specific death rate} = \frac{\text{number of deaths from a specific cause among a total population or one age group in a given year}}{\text{midyear population (total or age-specific)}} \times 100{,}000$$

ii. Proportionate Mortality Ratio

The information conveyed by a cause-specific death rate differs from that given by a proportionate mortality ratio. This ratio--which is really a proportion--tells us the importance of a specific cause of death relative to all deaths in a population.

$$\text{proportionate mortality ratio} = \frac{\text{number of deaths from a given cause in a specified time}}{\text{total deaths in the same time}}$$

It is because the denominator here is the total number of deaths rather than the population at risk that we cannot determine the risk of death from the specific cause. The following example provides an illustration of the different information conveyed by cause specific mortality rates and proportionate mortality ratios: in the United States in 1975, the death rate from all causes in the 1-4 year old population was 70 per 100,000 and from injuries, 28.2; the proportionate mortality ratio for injuries in this age group was 40.0%. Among the elderly (aged 65-74 years), the death rates from all causes and from injuries alone were higher: 3190 deaths from all causes per 100,000 population and 65.5 deaths per 100,000 from injuries; in the elderly population, however, the proportionate mortality ratio from injuries was only 2.1%. Death rates

from almost all causes are higher among the elderly simply because they are more likely to die; however, injuries are a far less significant cause of death among the elderly than they are among young children.

iii. Case Fatality Rate

The case fatality rate is yet another misnamed proportion. It gives information about the lethality of any particular cause of death.

$$\text{case fatality} = \frac{\text{number of deaths from a given cause during a specified period}}{\text{number of diagnosed cases of that disease (in the same period)}}$$

In the case of a few diseases which progress slowly but are inevitably fatal, this proportion may be greater than one.

2. Fertility Rates

The final series of rates which we will consider here describe "the actual production of live offspring"(3) in a population; stillbirths, miscarriages and abortions are not included in these measures. Crude birth rates are only rough measures of fertility because EVERYONE in the population is included in the denominator; thus, one cannot determine whether a high crude birth rate arises from a high rate of childbearing among women of reproductive age or because women of reproductive age form a large proportion of the population. Because the denominators of fertility rates are formed ONLY of women of childbearing age, a high fertility rate can be interpreted in only one way: there is a high rate of childbearing among women of reproductive age.

$$\text{general fertility rate} = \frac{\text{number of live births in an area during a year}}{\text{midyear population of 15-44 (or 49) year old women in the same area}} \times 1000$$

It is also possible to generate fertility rates that are specific about one or more variables--for example age group and/or parity. An example of an age-specific fertility rate would be

$$\text{fertility rate for 15-19 year olds} = \frac{\text{number of live births to 15-19 year old women in an area in a year}}{\text{midyear population of 15-19 year old women in the same area}} \times 1000$$

An example of a parity specific fertility rate would be

$$\text{fertility rate for primagravidas} = \frac{\text{number of first borns occurring in an area in a year}}{\text{midyear population of primagravidas in the same area}} \times 1000$$

It is also possible to consider the fertility of a cohort of women over all or part of their reproductive life. This may be expressed by a "completed fertility rate", which

is "the number of children EVER born per 1000 women by the end of their childbearing years".

Another expression of this concept--and one which generates a less cumbersome number--is the total fertility rate. This rate answers the question "How many children will a woman be most likely to have?" It tells us "the average number of children that would be born per woman if all women lived to the end of their childbearing years and bore children according to a given set of age-specific fertility rates."

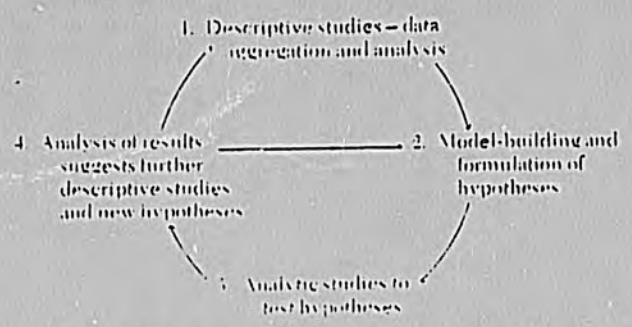
$$\text{total fertility rate} = \frac{5 \times [f(15\text{-}19) + f(20\text{-}24) + f(25\text{-}29) + f(30\text{-}34) + f(35\text{-}39) + f(40\text{-}44) + f(45\text{-}49)]}{1000}$$

In this formula, f is the age-specific fertility rate for each age group; we multiply by five because each age-specific rate covers an interval of five years (but this may vary if age intervals are greater or less than five years).

It is these various types of fertility rates rather than crude birth rates which are best used to evaluate the success of family planning programs. Interventions aimed at specific groups (e.g., adolescents) should be evaluated using age-specific rates.

ANALYTIC EPIDEMIOLOGY

The descriptive techniques reviewed in the previous section allowed us to identify groups with high or low rates of disease. Next, we need to determine why rates are high or low in certain groups--and, from the perspective of a Save the Children program planner--to determine whether or not our interventions are effective in reducing rates of disease. The following diagram illustrates the interaction between descriptive and analytic techniques:



The four most common analytic studies are ecologic, cross-sectional, case-control and cohort. For reasons to be explained below, the first two of these cannot really prove hypotheses and are best considered hypothesis-generating. The raison d'etre of every analytic study is to produce a "measure of association" between two factors: the measures with which we usually deal are correlation coefficients, odds ratios and relative risks. It is important to bear in mind that NOT all positive measures of association indicate causality: if a study is biased it may show an "artifactual" association; if a risk factor and a disease are both related to some common underlying phenomenon, their association may be indirect. In order to assess whether an association is causal, the following criteria should be met:

1. temporally correct association: exposure to the suspected risk factor or beneficial intervention must antedate the onset or prevention of disease. (As will be explained later, only case/control and cohort studies can demonstrate this type of temporal relationship.)

2. strength of the association: the larger and more statistically significant the relative risk or odds ratio, the more likely it is that an association is causal.

3. dose-response relationship: with greater exposure to the suspected risk factor or positive intervention, a corresponding increase or decrease in incidence of disease should occur.

4. consistency of the association: the relationship between disease and risk factor (or intervention) should be demonstrable in different settings.

5. coherence with existing information: a causal interpretation of a demonstrated association should be plausible in light of existing biologic knowledge.

The tools of analytic epidemiology may be used in both the field and the laboratory. In the lab, however, we are more likely to have the luxury of randomizing our study subjects and thereby controlling for confounding factors. Randomization--or the assigning of individuals to be exposed or not exposed to a given risk factor or intervention in such a way that exposed and unexposed groups are as similar as possible--is usually impossible and often unconscionable under field conditions.

Therefore, some means of controlling for confounding factors must be built into the design of analytic field studies. Likewise, field researchers should generally be more willing than their counterparts in the lab to consider the same individuals as controls and subjects--at points before and after they receive a given intervention. Regardless of study design, researchers must be mindful of unintentional biases in verifying exposure or disease status: such biases may invalidate the results of a study.

I. Ecologic and Cross-Sectional Studies: Generating Hypotheses

A. Ecologic Studies

An ecologic study examines the presence of risk factors at the population rather than the individual level and attempts to document a correlation between the presence of disease in the population and the presence of the hypothesized risk factors (e.g., a study of median household income and cancer mortality rates in various New York City communities.)

Ecologic studies cannot be used to prove causality because they are subject to the ECOLOGIC FALLACY--"the bias that may occur because an association observed between individuals on an aggregate level does not necessarily represent the association that exists at the individual level". Because data on the status of individuals have not been collected, it is not possible to make statements about individual risk. (With regard to the above example, poor communities may show higher cancer mortality rates, but the people dying of cancer in those communities may not be the ones who are poor.)

If at all possible, data should be analyzed using a study format which will demonstrate associations more conclusively than would an ecologic study. The following is an example of an ecologic study plan which was formulated more by accident than intent. Three years ago, malnourished children in several villages were divided into two groups: in each village, the mothers of one group received nutrition education in a three day course; mothers of the other group received a more intensive two week course in nutrition education and supplementation.

Now we would like to compare the success of these interventions according to three measures: 1) mortality rates among children who received the two types of interventions; 2) present levels of malnutrition among children who received the two types of interventions; and 3) present levels of malnutrition among the siblings of children who received the various types of interventions. However, a problem emerged: in each village, only the total child population and the numbers of children receiving each type of intervention are known. Because individuals cannot be identified and their past history (relative to participation in the nutrition session) or present nutritional status ascertained, the only study possible is an ecologic one: the percentage of children who received various interventions can be correlated with percentages who are now malnourished, but this will only suggest whether one intervention might have been more effective than the other--it will prove nothing.

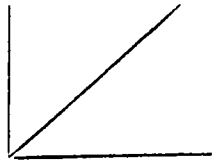
B. Cross-Sectional Studies

A cross-sectional study is one in which "the presence or absence of disease and the presence or absence of another variable (or the level of another variable, if quantifiable) are determined for each member of the study population in a representative sample."

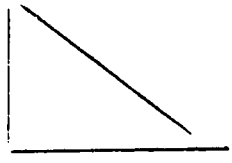
Even though variables are measured here at the individual level, this type of study also does not yield information about causality: cross-sectional surveys study the PREVALENCE of risk factors and diseases rather than the incidence of disease after exposure to a given risk factor; because both risk factor and disease are determined at the same time, the temporal sequence necessary to prove causality does not exist. An example of a cross-sectional study which we might undertake would be an attempt to correlate women's hematocrit during pregnancy with some measure of their nutritional status (e.g., weight gain during pregnancy).

The measure of association that is generated in both cross-sectional and ecologic studies is the correlation coefficient. This measure, (represented by r), indicates the degree to which two variables are linearly related and ranges between +1 and -1.

r=+1
One variable varies directly with the other in a perfectly linear relationship.



r=-1
One variable varies inversely with the other to produce a negative linear relationship.



C. Case/Control and Cohort Studies

Both case/control (or retrospective) and cohort (or prospective) study designs generate measures of association between an INDIVIDUAL'S disease status and his exposure to specific risk factors (or interventions), and both rely on cross-tabulation between disease and risk factor (or intervention) in order to do so. In both types of studies, it is important to control for confounding variables and, as far as possible, to eliminate potential biases. Before designing either study, you must obtain information which will be used in calculating the sample size needed to achieve statistically meaningful results.

As indicated by the names retrospective and prospective, these two studies approach the same question from opposite directions. In a case/control or retrospective study, you begin with a group of people who are ALREADY DISEASED and match them up with a group of similar but disease free people (controls); you then see if these two groups differ in the proportion of members who were exposed IN THE PAST to the suspected risk factor or intervention. In a cohort or prospective study, you begin with two groups or cohorts of DISEASE-FREE people who differ in their exposure to a suspected risk factor; these two groups are followed FORWARD over time to determine whether or not they will differ in their development (incidence) of disease.

1. Cohort (Prospective) Studies

Because this study design allows us to compare the actual INCIDENCE of disease in two or more groups who vary according to their exposure to a hypothesized risk factor, it produces the most reliable measure of association between risk factor and disease. This measure is called the relative risk--"the ratio of the incidence rate for persons exposed to a factor to the incidence rate for those not exposed."

$$\text{relative risk} = \frac{\text{incidence rate among exposed}}{\text{incidence rate among unexposed}}$$

The format for analyzing data in a prospective study is as follows:

exposure	disease		total
	develop disease	do not develop	
exposed	a	b	a+b
not exposed	c	d	c+d
total	a+c	b+d	a+b+c+d

The incidence of disease among the exposed is represented by a/a+b. The incidence of disease among those not exposed is represented by c/c+d. Therefore,

$$\text{relative risk} = \frac{a/a+b}{c/c+d}$$

i. Example

Let us now consider how the concept of relative risk may be modified slightly to suit our assessment of a particular intervention in the field. Assume that we would like to determine whether participation in Women's Savings Groups (WSG's) is associated with a greater likelihood of family planning acceptance. Participation of women in WSG's then becomes the "exposure" and acceptance of family planning replaces "disease". (Alternately, we could consider "pregnant" and "not pregnant" as the replacement for disease status.) One year after the WSG's have been established, we find that 100 village women are using family planning and that they are distributed between WSG members and non-members as indicated in the table below:

	accepts family planning	does not accept family planning	total
WSG member	75 (a)	75 (b)	150
non-member	25 (c)	75 (d)	100
	100	150	

The association between acceptance of family planning and membership in WSG's may therefore be measured as follows:

$$\text{likelihood that WSG members accept family planning} = \frac{75}{75+75} = .5$$

$$\text{likelihood that non-members accept family planning} = \frac{25}{25+75} = .25$$

relative risk = .5/.25 = 2

This should be interpreted as "The likelihood of family planning acceptance is two time greater among WSG members than among non-members."

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ii. Population Attributable Risk

Relative risk is a measure of association which describes INDIVIDUAL risk. At times we wish to see how this measure of individual risk relates to the risk of disease which an entire POPULATION experiences as the result of a particular exposure.

Population Attributable Risk (PAR) "indicates the proportion of all cases in a general population that can be ascribed to a specific risk factor."

$$PAR = \frac{\text{incidence in total population - incidence in unexposed}}{\text{incidence in total population}}$$

Another equation for calculating population attributable risk illustrates more clearly the importance of the proportion of exposed people in the population as well as each person's relative risk:

$$PAR = \frac{p(r-1)}{p(r-1) + 1}$$

, where p is the proportion of people exposed to a factor and r is the individual's relative risk of disease in relation to that exposure.

Both of these equations generate a percentage which indicates the proportion of cases in the population which may be attributed to a given exposure.

2. Case/Control (Retrospective) Studies

In a retrospective study, we begin with people who have a given disease and work backwards to determine their exposure status: thus, we never have the opportunity to consider the entire population of those who might have developed the disease and cannot really measure disease incidence. It is for this reason that the measure of association generated in a case/control study--the odds ratio--is a less persuasive one than the Relative Risk generated in cohort studies. The odds ratio tells us "the odds in favor of having the disease with the factor present and the factor absent, respectively." (3)

In a case/control study, we first identify a group of diseased people (cases) and then select a group of disease-free people (controls). In order to ensure the validity of study results, controls should have had the same opportunity to be exposed as cases. After cases and controls are selected, we determine the exposure history in each group.

The format for analyzing data in a case/control study resembles that used in a cohort design:

exposure	disease status has disease(case)	no disease(control)	total
exposed	a	b	a+b
not exposed	c	d	c+d
total	a+c	b+d	a+b+ c+d

If data are arranged in this way, a cross-multiplication short cut may be used to determine the odds ratio:

$$\text{odds ratio} = \frac{ad}{bc}$$

A case/control design has been used in some MotherCare projects to measure the association between adverse birth outcomes and various risk factors. Let us assume that in a given impact area we wish to study the association between perinatal mortality and delivery by a trained vs. untrained Traditional Birth Attendant (TBA). First we would identify all cases--mothers who within the last year had experienced a perinatal death (i.e., death of a newborn in the first seven days of life); then we would identify a group of mothers as similar as possible to our cases who had given birth in the last year and whose infants had survived the perinatal period. (Reduction of confounding factors in choosing controls will be discussed later.) We will then interview cases and controls to determine the proportions in each group who had been delivered by trained vs. untrained TBA's. Let us assume that in the last year, 75 women had experienced perinatal mortality; they are matched to 75 controls whose newborn infants survived the perinatal period. We then study the distribution of trained vs. untrained TBA's among cases and controls and create the following table:

	perinatal mortality	newborn survival	total
trained TBA	30 (a)	50 (b)	80
untrained TBA	30 (c)	15 (d)	35
other	15	10	25
total	75	75	150

Ignoring the "other" type of delivery assistant, we can generate an odds ratio:

$$\text{Odds Ratio} = \frac{ad}{bc} = \frac{(30)(15)}{(30)(50)} = .3$$

This odds ratio should be interpreted as follows: the odds of perinatal death among infants born to women delivered by trained TBA's are .3 those of infants born to women delivered by untrained TBA's.

The case/control study design obviously yields results more quickly than a cohort study (as there is no need to follow subjects prospectively) and therefore tends to be less expensive: often an hypothesis is tested first with a case/control study and then more definitively with a cohort study. A case/control study is better suited to investigating associations involving rare diseases: it would be necessary to follow too large a cohort in a prospective study in order to observe a number of diseased subjects sufficiently large to draw conclusions. While a cohort design gives us the flexibility to measure the association between a hypothesized risk factor and several different diseases, a case/control study allows us to examine the relationship between one disease and several possible risk factors.

3. Bias and Confounding in Case/Control and Cohort Studies

a. Bias

Bias is defined as "any trend in the collection, analysis, interpretation, publication or review of data that can lead to conclusions that are systematically different from the truth." (In this definition, "systematically" refers to errors which always occur in one direction rather than randomly.) Both case/control and cohort studies are subject to bias--though the nature of the most significant types of biases may differ.

One of the most significant biases in case/control studies is "recall bias"--that is, the greater likelihood that cases will recall an exposure than will controls. Because cohort studies begin with classification according to exposure status, they are not subject to this type of bias: they may, however, be subject to bias in the ascertainment of disease--greater efforts may be made to diagnose disease in the group which is known to be exposed.

b. Confounding

Confounding may be defined as "the distortion of the apparent effect of an exposure on risk brought about by the association with other factors that can influence the outcome"; a confounding variable is a factor which is known to be "associated with the exposure of interest and causally with the disease under study." Common confounding factors in the types of epidemiologic studies we do are educational level and socioeconomic status--both factors are usually related to the exposure as well as the disease. If we do not control for confounding in either a cohort or a case/control study, results will be biased. Some methods of controlling for confounding are described below.

i. Stratification According to Confounding Variables

In stratification, cases and controls OR exposed and unexposed people are grouped according to various levels of a confounding variable; comparisons of risk between cases and controls or exposed and unexposed are made only within these levels.

As an example, let us return to our cohort study of Women's Savings Groups and family planning acceptance. We have noticed that women who join these groups are more well-educated than those who do not; likewise, we know that more well-educated women are more likely to accept family planning. Therefore, in order to be certain that our observed association between WSG membership and acceptance of family planning does not simply reflect the higher proportion of well educated women among WSG members, we should stratify our cohort according to educational level. First, we decide that two appropriate educational levels will be "less than five years of schooling" and "more than five years of schooling." We then distribute our cohort between two tables, as follows:

women with less than five years of schooling

	accept family planning	do not accept family planning	total
WSG member	17	8	25
non-member	3	72	75
total	20	80	100

women with more than five years of schooling

	accept family planning	do not accept family planning	total
WSG member	75	50	125
non-member	5	20	25
total	80	70	150

Next, we calculate measures of association for each of the two levels of the confounder.

measure of association between family planning acceptance and membership in WSG for less educated women:
incidence of family planning
acceptance among WSG members: 17/25 = .68
incidence of family planning
acceptance among non-members: 3/75 = .04
measure of association: .68/.04 = 17

measure of association between family planning acceptance and membership in WSG for more educated women:
incidence of family planning
acceptance among WSG members: 75/125 = .6
incidence of family planning
acceptance among non-members: 5/25 = .2
measure of association: .6/.2 = 3

Controlling for educational level does not weaken the association between membership in WSG's and acceptance of family planning: we see that WSG members are more likely to accept family planning, regardless of their educational level. It is interesting that participation in WSG's is most strongly associated with acceptance of family planning among less educated women.

For further reading:

Mausner, J.S. and Kramer, S. Epidemiology--An Introductory Text. W. B. Saunders Company, Philadelphia, 1985.

Leaverton, P.E. A Review of Biostatistics: A Program for Self-Instruction. Little, Brown and Company, Boston, 1991.

Management Tools for Improving the Quality of Health Information in Systems Based on Full Enrollment and Sentinal Surveillance

Save the Children has built into many of its primary health care programs a population based health information system which requires complete enrollment of all community residents and periodic updating of health data for targeted populations (e.g., women of reproductive age and children younger than five years). The rationale of such full enrollment systems is 1) to enable community residents to assess and address their own health needs; 2) to promote protective health behaviors and use of preventive health services in an equitable way (i.e., in a way which ensures that no segment of the population will be "left out"); and 3) to collect reliable epidemiologic data. Thus, activities which are necessarily entailed in such a system are 1) training community residents to analyze and interpret health data; 2) enumerating the entire population and periodically monitoring targeted groups; and 3) assuring the quality of data collected.

As Save the Children and other PVOs are beginning to realize, however, the amount of supervision required to maintain the quality of health data may be considerable and costly. Moreover, the unpaid volunteers who are usually trained to collect data may not be able to visit homes as frequently as planned. As PVOs move towards coverage of larger populations in their programs, the wisdom of instituting community-based systems capable of generating epidemiologically sound data for the entire population becomes more and more questionable.

A logical alternative is the demarcation of a portion of the program area as a sentinal surveillance area: in this limited area, health data will continue to be gathered with enough rigor to allow for valid epidemiologic analysis of longitudinal trends. In the rest of the program area, a scaled-down version of the population-based HIS may be maintained: this "streamlined" HIS may continue to have as its objectives the equitable promotion of preventive health care and the empowerment of community residents--but NOT the collection of data for use in epidemiologic studies. One version of such a streamlined HIS would require a complete community census at the start of the project (to allow for planning of services), and then bi-annual identification of all pregnant women in the community and follow up of birth outcomes. By focusing on pregnant women, the system would support three important health activities: promotion of prenatal care; provision of information about safe delivery and options in case of complications; and (as birth outcomes were followed in subsequent bi-annual visits) promotion of appropriate early chid care (e.g., exclusive breastfeeding, immunizations).

In any system designed to generate data which are epidemiologically useful--whether based on enrollment of the entire program population or of a sentinal population--it is obviously important that data collected be of high quality. Save the Children has found the following supervisory tools useful for ensuring data quality:

1. Periodic surveys to determine whether a significant proportion of families might not have been registered in the system.

   Within the territory of each community health worker, the program supervisor randomly visits some households. At each household, the head-of-household or mother is asked whether his/her family has ever been enrolled and is shown the enrollment form which an outreach worker would have used during the registration interview; some very simple socioeconomic data about the family (e.g., ethnicity, rough estimate of income) are also noted at this time.

The family's report about its enrolment status is compared to CHW's records, and the proportion of unregistered families is noted. The collection of some very simple socioeconomic data allows the supervisor to determine whether certain groups (e.g., new in-migrants, the very poor) have been selectively omitted.

2. Lot Quality Assurance (LQA) techniques to determine whether data collected by individual community health workers are acceptable.

LQA is a technique for stratified random sampling which was originally developed by industry and which has been adapted to assess the quality of health care interventions. (1,2) When Save the Children used this technique to assess the quality of data in its HIS, it defined "lots" as the households covered by each CHW. Random samples were drawn from each lot, with the size of the sample determined by the answers to two questions: a) Do you think there is a large difference in the proportion of UTD records between CHWs? (yes) and b) Do you wish to focus your efforts on finding the CHWs who need help? (yes) (A standard table has been developed to facilitate determination of sample size once the answers to these two questions are known.) We then defined what proportion of data MUST be correctly recorded on the CHW register (upon comparison to the actual home situation) in order for that record to be considered "acceptable" (85%). Finally, we determined the percentage of records that were acceptable in each lot and identified those CHWs who needed better supervision. (The questionnaire used during home visits to gather the data which were compared to CHW rosters is included as an appendix.)

3. Tables showing vital event rates (e.g., crude birth rate and IMR) which can be expected in small areas based on national rates.

Under-reporting of vital events is often a problem. Even though great fluctuation can normally be expected in rates reported for small areas at different points in time, we think that supervisors should inform CHWs of the numbers of births or deaths which would be expected in their communities if national rates prevailed; usually the areas in which PVOs works are the most disadvantaged of national regions, so the actual numbers of births and deaths are likely to exceed numbers based on national rates.

For example, given

1991 national crude birth rate: 28 births per 1000 people
1991 infant mortality rate: 70 infant deaths per 1000 live births
total impact area population of 16,500 divided into 5 villages

a "small area supervisor's table" could be as follows:

village	population	live births expected yearly (or in 6 mos)		infant deaths expected yearly (or in 6 mos)	
1	3300	92	(46)	7	(3-4)
2	3600	101	(51)	7	(3-4)
3	3000	84	(42)	6	(3)
4	2000	56	(28)	4	(2)
5	4600	129	(65)	9	(4-5)

4. Periodic comparison of birth reports and pregnancy registers

Live births are frequently under-counted. One reason for this is the CHW's tendency to classify an infant who dies very shortly after birth as a stillbirth; (sometimes, however, the opposite occurs and the CHW will classify a stillbirth as an infant death). The definition and correct reporting of stillbirths should be clarified for CHWs. Periodic comparison of numbers of reported births to numbers of pregnancies will help determine if misclassification of stillbirths is occurring: this of course assumes fairly complete recording of pregnancies.

References:

1. Wolff, M.C. and Black, R.E. Manual for conducting a Lot Quality Assessment in an Oral Rehydration Therapy Clinic. WHO. June, 1986.
2. Sandiford, P., Annett, H. and Cibulskis, R. What can information systems do for primary health care? An International Perspective. Soc. Sci. Med. 1992. 34 (10): 1077-1087.

Report on Computer Component of ProMIS Conference

During the period of August 2 to August 6, the MIS Department in Westport participated in the ProMIS conference hosted by the Health Unit. The purpose of the conference was to strengthen the technical capabilities of the field offices which use the ProMIS computer system to manage their health data. This strengthening was to be accomplished by splitting the conference into two sections; a computer technical section and a health section. The two sections were to work independently for half of the time and during the second half of the week they were to work together on a practical. The MIS department was to facilitate the computer technical section and provide technical assistance to the practical section.

There are four field offices who use ProMIS (Mali, Burkina Faso, Haiti and Bolivia) and each was to send one technical staff member in additional to a health staff member. The technical staff were to bring a current copy of their data set to work with. As a prerequisites, the technical staff were to have a working knowledge of dBase (or a compatible computer language) and ProMIS.

During the two and a half days the computer specialists were together, we discussed various technical aspects of ProMIS. The primary focus of the conference was to clarify the file structures used in ProMIS and to develop techniques for extracting data from the files. The intention was to develop a level of comfort with working with the data files directly, using dBase as the tool. The nature of each file was explained as well as the purpose behind each field in each file. The relationships between the files were also explained. At each step along the way, the participants were given exercises so that the techniques could be reinforced. These exercises included extracting data and producing reports.

Also discussed were methods used to customize ProMIS to a particular field office's needs. ProMIS uses many parameters to indicate how it should function. Everything from the age range of a woman of child bearing age to how the boxes on the screen should look are controlled by parameters. Any of these parameters can be changed and the participants were shown how to accomplish this.

In addition to the ability to work with ProMIS, there was also a discussion about the features of ProMIS that were due in the new version. Particular attention was placed on the generic module and the export program. Since a preliminary version of the export program was available for use, the participants were able to practice with the software. In fact, based on this practice session some adjustments were made to the software that will facilitate its use in the field.

Finally, there was some general discussions about ProMIS - its strengths and weaknesses, its history, etc.

As mentioned, all of the computer participants were expected to know dBase and be familiar with how ProMIS actually works in the field. Only one participant, Pacifico

Copa from Bolivia, thoroughly met these requirements. Despite his lack of English (we provided translation for him) he was able to do the exercises without help and, in most cases, went beyond what was asked. The other participants varied in their knowledge of both the system and the computer. Ibrahim Camara from Mali had a moderate grasp of both dBase and ProMIS. He was able to do the exercises with only a moderate amount of assistance from the MIS staff involved. Paul Brea from Haiti also fit into this category. He doesn't work for Save, but for a partner agency in Haiti and is available to lend technical support where needed. Gaston Sabgo from Burkina Faso needed the most technical assistance. His knowledge of how ProMIS works was barely adequate and his facility with dBase was almost nonexistent.

The participants to the conference were given a handout which describes all of the files used in the ProMIS system as well as all of the parameters which can be changed to customize the system.

During the second half of the week the computer participants worked with their health counterparts on a research problem. Some of them were limited in the kinds of question they could research since the data they brought was not complete. Haiti was an example of this since they only recently began entering data into their system. However, most groups managed to work on their own with varying degrees of assistance from the facilitators. Bolivia needed the least amount of help while Burkina needed the most. Mali and Haiti fit somewhere in between.

Overall, I believe the technical component of the conference was successful and met the needs of the participants. Of course, where the participants didn't have the required prerequisites then they might not have come away with as much as we would have hoped. In general, though, this sort of technical exchange has been lacking and i am hopeful that more conferences of these kinds can be held.

APPENDIX A

List of Reading Materials Used by Participants

1) *Survey to verify HIS data and population enrollment in Malawi*, Loren Galvao, 1992

2) *Indirect Estimation of Maternal Mortality, the Sisterhood Method*, W. Graham, W. Brass, R.V. Snow, Centre for Population Studies, Longdon School of Hygiene and Tropical Medicine

3) *Can Health Programs Improve Health?*, Warren L. Berggren, M.D., Dr. P.H., American Public Health Association Panel, November 1991

4) *Verbal Autopsy: Using Interviews to Determine Causes of Death in Children*, Dr. Ronald H. Gray, The Johns Hopkins University, School of Hygiene and Public Health, March 1991

5) *A Review of Biostatistics*, Paul E. Leaverton, Ph.D., Little Brown and Co., 1986

6) Sample Size Determination, *Epidemiology--An Introductory Text, Mausner*, J.S. and Kramer, S., W.B. Saunders Company, 1985

Objectives of the Technical Component of the ProMIS Conference

By the end of the conference, each participant should:

- understand the purpose of each of the files used by the system
- be able to extract data from the files using dBase or a dBase-like sofware package
- be able to extract data from the files using the Export program
- be able to customize the way the system looks and operates
- be able to link their own data files to the ProMIS files
- understand the changes coming with version 2 of ProMIS

Tentative Agenda for the Technical Component of the ProMIS Conference

- Overview of ProMIS from the user's perspective
- Overview of ProMIS from the Technician's perspective - looking inside
- Detailed look at the data files used by the ProMIS Software
- Retrieving data from the ProMIS data files using dBase programming
- Overview of other software available for accessing the ProMIS data files
- Creating new data files and linking them to the ProMIS system
- Customizing ProMIS: Changing the parameters that make ProMIS work
- New features in Version 2

This conference belongs mostly to the participants from the countries using ProMIS. They should feel free to redirect the conference agenda to suit their needs.

Varieties of files in ProMIS

ProMIS uses a number of different kinds of files. You can tell what a ProMIS file is used for by its extension. Files with the extension .DBF are dBase III and IV compatible. You may copy these and use them with other dBase compatible database packages, either programmable packages such as dBase, Foxpro, Superbase4, DBFast, R:Base; or non-programmable packages such as Alpha4 or Approach. PLEASE USE COPIES OF THE DATA FILES AND NOT THE FILES THEMSELVES IN ANY APPLICATIONS OUTSIDE ProMIS.

File extensions that you may see in your ProMIS directory include:

.CFG	Lists of variables and values used by ProMIS.
.COM	A Clipper file.
.DBF	DBase compatible data files.
.EXE	Compiled Clipper program.
.IDX	Index information files.
.MNU	The ProMIS menu.
.MSG	Text files that contain messages displayed in ProMIS.
.NTX	Clipper index files.
.PRN	Reports or rosters output to text (ASCII) files.

Please do not use any of these files outside of ProMIS, except for the .PRN files, which you can copy, delete, import to your word processor, and generally use in any way you want. If you need to use ProMIS data files outside of ProMIS, copy them into another directory and use them there.

Configuration Files:

These files define the way ProMIS works.

PROMIS.CFG — This file defines the way ProMIS is configured. Since each installation of ProMIS is different, the software needs some way to know how each installation is defined. Once ProMIs has been installed, NEVER CHANGE THIS FILE! The fields contained in this file are as follows

KERNEL.CFG — This file is used to change the way ProMIS works, particularly the demographic kernel. The items in this file may be changed, but since ProMIS does not validate the entries, they must be changed with care.

HEALTH.CFG This file is used to change the way the ProMIS health module works. The items in this file may be changed, but since ProMIS does not validate the entries, they must be changed with care.

Data Files:

Here is a list of ProMIS data files, with file structure, and an explanation of fields:

CSP.DBF Child spacing data. Each record has ID number for an adult, one date and a code for the child spacing method the person is using as of that date. You may record multiple dates and child spacing methods for each adult. Codes for child spacing method may be defined under Health Code Maintenance on the Admin menu. Fields are:

INDID	numeric	7	person's ID number
H_CSPD	date	8	date information was recorded
C_CSPT	character	1	code for method being used

DEA.DBF Death data. Each record contains ID number for a deceased person, date death was reported, and may contain codes for one primary and two secondary causes of death. You may define cause of death codes under Health Code Maintenance on the Admin menu. Fields are:

INDID	numeric	7	ID number of deceased
H_DEA1	date	8	date death was reported
H_DEA2	character	1	primary cause of death
H_DEA3	character	1	secondary cause of death
H_DEA4	character	1	secondary cause of death

GRO.DBF Growth promotion data. Multiple dates and weights may be recorded for each child under 5 years of age. Each child will have one record for each date and weight. Fields are:

INDID	numeric	7	ID number of child
H_DATE	date	8	date child was weighed
H_WEIGHT	numeric	4	weight of child

HFO.DBF

List of codes and messages for health pick lists, along with the name of the field in which they can be entered - i.e., the codes for child spacing method are entered in a field named C_CSPT (in the file CSP.DBF). Other codes in HFO include cause of death, location of childbirth, type of pregnancy termination, etc. Fields are:

TOKEN	character	6	name of field in which code can be entered
TYPE	character	2	code
MESSAGE	character	10	meaning of code

IMN.DBF

List of immunizations given to a child. This file contains the child's ID number, a field in which to enter a date for each vaccination, plus a field in which you can enter a code to indicate whether the date of vaccination is accurate or approximate. Included are fields for four user-defined vaccinations. These are entered under Health Code Administration. Fields in IMN.DBF are:

INDID	numeric	7	ID number of child.
H_BCGT	character	1	code for approximate date of BCG immunization
H_BCGD	date	8	date of BCG immunization
H_DPT1T	character	1	code for approximate date of first DPT immunization
H_DPT1D	date	8	date of first DPT immunization
H_DPT2T	character	1	code for approximate date of second DPT immunization
H_DPT2D	date	8	date of second DPT immunization
H_DPT3T	character	1	code for approximate date of third DPT immunization
H_DPT3D	date	8	date of third DPT immunization
H_DPTBT	character	1	code for approximate date of DPTB immunization
H_DPTBD	date	8	date of DPTB immunization
H_OPV1T	character	1	code for approximate date of first OPV immunization
H_OPV1D	date	8	date of first OPV immunization
H_OPV2T	character	1	code for approximate date of second OPV immunization
H_OPV2D	date	8	date of second OPV immunization
H_OPV3T	character	1	code for approximate date of third OPV immunization
H_OPV3D	date	8	date of third OPV immunization
H_OPVBT	character	1	code for approximate date of OPVB immunization

H_OPVBD	date	8	date of OPVB immunization
H_MEAST	character	1	code for approximate date of measles immunization
H_MEASD	date	8	date of measles immunization
H_FO1T	character	1	code for approximate date of field-office-defined immunization 1
H_FO1D	date	8	date of field-office-defined immunization 1
H_FO2T	character	1	code for approximate date of field-office-defined immunization 2
H_FO2D	date	8	date of field-office-defined immunization 2
H_FO3T	character	1	code for approximate date of field-office-defined immunization 3
H_FO3D	date	8	date of field-office-defined immunization 3
H_OPVOT	character	1	code for approximate date of OPV zero immunization
H_OPVOD	date	8	date of field-office-defined OPV zero immunization

IND.DBF

This file contains one record for each individual in ProMIS, with that person's ID number, last name, first name, sex and date of birth. Fields are:

INDID	numeric	7	individual id number
LNAME	character	20	last name
FNAME	character	20	first name
SEX	character	1	sex
DOB	date	8	date of birth

LEV1.DBF

This file contains names and numbers for regions in ProMIS. Regions are numbered, 1, 2, 3, etc. Fields are:

L1CODE	character	2	number for region
L1NAME	character	20	region name

LEVn.DBF

This file contains village code, village name, and date of survey for each village in ProMIS. Village code contains the region number plus the village number. Fields are:

LnCODE	character	5	village code
LnNAME	character	20	name of village
LnDATE	date	8	date of survey of village

LOC.DBF

This file associates an individual with a particular location and also contains a code denoting the person's status at that location (resident, moved out, out-migrated, dead) as well as a code denoting the person's relationship to his/her family group. The relationship could be mother, father, child, cousin, etc. If a person has moved from one group to another within ProMIS, he/she will have two records in this file, one for the former family group, with a status of moved out, and one for the new family group, with a status of resident. Fields are:

LOCATION	character	15	full numeric code for region, sub-region, village, household and group
INDID	numeric	7	ID number for individual
STATUS	character	1	code for status
RELATE	character	2	code defining person's membership in family group

MSG.DBF

This file contains system messages and codes that call those messages. Some of these codes are field names in other files and the associated messages contain a description of the field contents. Fields are:

TOKEN	character	6	code or field name
MESSAGE	character	180	associated message

ORT.DBF

This file contains records on the most recent ORT training and use for each person. Each record contains an adult's ID number, date of last training, date of last evaluation, and date of last use. Fields are:

INDID	numeric	7	ID number for individual
H_ORT1	date	8	last training
H_ORT2	date	8	last evaluation
H_ORT3	date	8	last use

PREG.DBF

This file contains one record per pregnancy for each woman who has had one or more pregnancies tracked in ProMIS. Fields are:

INDID	numeric	7	ID number for mother
H_PREP	date	8	date pregnancy was reported
H_PEXP	date	8	due date
H_PTERM	date	8	termination date
H_PTYP	character	1	termination type (codes for this are field-office defined and entered under Health Code Maintenance on the Admin menu. Possible termination types include live birth, miscarriage, etc.)
H_PBA	character	1	birth attendant (codes for this are field-office defined and entered under Health Code Maintenance on the Admin menu. Possible entries might include midwife, husband, doctor, etc.)
H_PLOC	character	1	location code (codes for this are field-office defined and entered under Health Code Maintenance on the Admin menu. Possible entries might include home, clinic, hospital, etc.)
P_PCON	numeric	2	number of consultations
H_PKID	numeric	7	ID number for child if live birth

RELATE.DBF

This file contains possible family group relationships and codes that are used to designate them. This is defined by each field office in Relationship Code Maintenance under the Admin menu.

RELCODE	character	2	code for relationship
RELNAME	character	15	relationship (mother, father, daughter, nephew, etc.)

SEI.DBF

List of economic indicators for a specific group. File contains location code for group, date indicators were noted, and space for nine socio-economic indicator codes, which can be defined by the field offices. SEI.DBF fields are:

LOCATION	character	12	full location code for group
DATE	date	8	date indicators surveyed
I1	character	1	indicator 1
I2	character	1	indicator 2
I3	character	1	indicator 3
I4	character	1	indicator 4
I5	character	1	indicator 5
I6	character	1	indicator 6
I7	character	1	indicator 7
I8	character	1	indicator 8
I9	character	1	indicator 9

SEINFO.DBF

List of socio-economic indicators and associated codes. The number in TOKEN designates associated codes. For example I1 could be used to hold data on water sources. TOKEN would be I1 for all entries relating to water source. Type would indicate type of water source. Type 0 indicates the general category of the indicator (water source), while type 1 could be a well, type 2 a cistern, etc. Message is a description of what is indicated by the code (well, cistern, etc.).

TOKEN	character	3	associated field name in SEI.DBF
TYPE	character	1	code
MESSAGE	character	20	description

TT.DBF

Information on tetanus vaccinations for a woman of childbearing age. Each record contains the woman's ID number, five date fields, and a one character field for each date to indicate whether that date is actual or approximate. Fields are:

INDID	numeric	7	woman's ID number
H_TT1T	character	1	fill in if date 1 is approximate
H_TT1D	date	8	date of first vaccination
H_TT2T	character	1	fill in if date 2 is approximate
H_TT2D	date	8	date of second vaccination
H_TT3T	character	1	fill in if date 3 is approximate
H_TT3D	date	8	date of third vaccination
H_TT4T	character	1	fill in if date 4 is approximate
H_TT4D	date	8	date of fourth vaccination
H_TT5T	character	1	fill in if date 5 is approximate

H_TT5D	date	8	date of fifth vaccination

VE.DOC

Vital events file. Contains full location code for an individual, date of vital event, and vital event code. One person will have one of these records for each vital event.

LOCATION	character	15	full location code for an individual
DATE	date	8	date of vital event
EVENT	character	1	vital event code

WFORA.DBF

This is a table of children's ages in months, with weights below which a child of that age is first, second, and third degree malnourished. The first field in a record indicates the standard being used (i.e., Gomez). Fields are:

TYPE	character	5		standard used
AGE	numeric	2		age in months
L1	numeric	4	1	first degree malnourished below this weight
L2	numeric	4	1	second degree malnourished below this weight
L3	numeric	4	1	third degree malnourished below this weight

List of all files in the system:

HEALTH.CFG	Health Module configuration file
KERNEL.CFG	Kernel configuration file
PROMIS.CFG	Installation dependent configuration file
BROWSE.COM	Program used to view reports on screen
CSP.DBF	Child Spacing data file
DEA.DBF	Cause of Death data file
GRO.DBF	Growth Promotion data file
HFO.DBF	Health Codes data file
IMN.DBF	Child Immunization data file
IND.DBF	Individuals data file
LEV1.DBF	Geographic codes data file
LEV2.DBF	Geographic codes data file
LEV3.DBF	Geographic codes data file
LOC.DBF	Location data file
MSG.DBF	Message data file
ORT.DBF	Oral Rehydration data file
PREG.DBF	Pregnancy data file
RELATE.DBF	Relationship codes data file
SEI.DBF	Socio-economic data file
SEINFO.DBF	Socio-Economic information data file
TT.DBF	Tetanus immunization data file
VE.DBF	Vital Events data file
WFORA.DBF	Weight for Age data file
BMG.ERR	Error file for building message file
INDEX.EXE	Index program
PROMIS.EXE	ProMIS program
HEALTH.IDX	Health file indexes
KERNEL.IDX	Kernel file indexes
PROMIS.MNU	Menu file
FO.MSG	Field Office specific messages
HLTH_ENG.MSG	English language messages for Health Module
HLTH_FRE.MSG	French language message for Health Module
KRNL_ENG.MSG	English Language messages for Kernel
KRNL_FRE.MSG	French language messages for Kernel
TTX1.NTX	Index for TT.DBF
TTX2.NTX	Index for TT.DBF
VEX1.NTX	Index for VE.DBF
VEX2.NTX	Index for VE.DBF
WFORAX1.NTX	Index for WFORA.DBF
CSPX1.NTX	Index for CSP.DBF
CSPX2.NTX	Index for VE.DBF
CSPX3.NTX	Index for VE.DBF
DEAX1.NTX	Index for DEA.DBF
DEAX2.NTX	Index for DEA.DBF

GROX1.NTX	Index for GRO.DBF
GROX2.NTX	Index for GRO.DBF
GROX3.NTX	Index for GRO.DBF
HFOX1.NTX	Index for HFO.DBF
IMNX1.NTX	Index for IMN.DBF
IMNX2.NTX	Index for IMN.DBF
INDX1.NTX	Index for IND.DBF
INDX2.NTX	Index for IND.DBF
LEV1X1.NTX	Index for LEV1.DBF
LEV2X1.NTX	Index for LEV2.DBF
LEV3X1.NTX	Index for LEV3.DBF
LOCX1.NTX	Index for LOC.DBF
LOCX2.NTX	Index for LOC.DBF
LOCX3.NTX	Index for LOC.DBF
MSGX1.NTX	Index for MSG.DBF
ORTX1.NTX	Index for ORT.DBF
ORTX2.NTX	Index for ORT.DBF
PREGX1.NTX	Index for PREG.DBF
PREGX2.NTX	Index for PREG.DBF
PREGX3.NTX	Index for PREG.DBF
SEINFOX1.NTX	Index for SEINFO.DBF
SEIX1.NTX	Index for SEI.DBF
SEIX2.NTX	Index for SEI.DBF

ProMIS Configuration Items

The following chart lists all of the items in the PROMIS.CFG file.

DO NOT CHANGE THE CONTENTS OF THIS FILE.

Code	Value	Description
numlev	3	Number of geographic levels
lsize1	1	Size of level 1
lsize2	5	Size of level 2
lsize3	5	Size of level 3
isize	2	Size of Individual code
hsize	5	Size of house number
gsize	4	Size of group number
lsize	2	Size of line number (same as isize)
kdelim	'*'	Character used in location id code
srsdnt	'0'	Status code for resident
sdeath	'1'	Status code for individual who is dead
soutmig	'2'	Status code for individual who has out-migrated
sotmove	'5'	Status code for individual who has moved
vdeath	'1'	Vital event code for death
voutmig	'2'	Vital event code for out-migration
vinmig	'3'	Vital event code for in-migration
vbirth	'4'	Vital event code for birth
votmove	'5'	Vital event code for moving out
vinmove	'6'	Vital event code for moving in
imcode	'E'	Relationship code for "mother"
chcode	'F'	Relationship code for "Child"

Kernel Configuration items

The following chart lists all the Kernel parameters in ProMIS:

Code	Default	Description
boxcol	See Color Chart	Clipper color code for regular boxes
errcol	See Color Chart	Clipper color code for error messages.
pickcol	See Color Chart	Clipper color code for pick lists - regular intensity
pickhigh	See Color Chart	Clipper color code for pick lists - high intensity
backcol	See Color Chart	Clipper color code for background
lightcol	See Color Chart	Clipper color code for Indicator light
menuboxd	See Color Chart	Clipper color code for Menubox dim entries
menubox	See Color Chart	Clipper color code for Menubox normal entries
menubar	See Color Chart	Clipper color code for Menu bar.
menubarh	See Color Chart	Clipper color code for Menu bar highlighted entries
unhigh	See Color Chart	Clipper color code for unhighlighted Data entry box
grphigh	See Color Chart	Clipper color code for group box highlight
grpget	See Color Chart	Clipper color code for group box gets
dethigh	See Color Chart	Clipper color code for detail box highlight
detget	See Color Chart	Clipper color code for detail box gets.
sumhigh	See Color Chart	Clipper color code for summary box highlight.
sumbar	See Color Chart	Clipper color code for summary box highlight bar
lport	1	LPT Port to use for printouts
menuright	74	Right margin for menu bar items
menuleft	5	Left margin for menu bar items
grptop	2	Line number of the top of the group definition box
grpleft	5	Column position of the group definition box
grpncol	30	Column position of other group information within the box
sumtop	9	Group summary data entry box top row
sumleft	0	Group summary data entry box left column
dettop	9	Individual data entry box top row
detleft	36	Individual data entry box left column
vedtop	6	Vital events data input box top row
vedleft	15	Vital events data input box left column
reptop	3	Output report data input box top row
repleft	10	Output report data input box left column
rngtop	3	Demographic report (user defined) age range data input box - top row
rngleft	10	Demographic report (user defined) age range data input box - left column
movetop	7	Selecting individual for move - box top row
moveleft	5	Selecting individual for move - box left column
seitop	5	Socio-economic data input box top row

seileft	10	Socio-economic data input box left column
reltop	5	Relationship code data input box top row
relleft	15	Relationship code data input box left column
path	c:\promis	Pathname where files are located
dospath	c:\dos	Location of DOS commands
msgpath	c:\promis	Location or ProMIS message file
backchr	176	Background fill char
pagelen	50	Number of lines for reports and rosters
megfree	3	how much Hard disk space needed
date	1	Date format 1 - American 2 - Ansi 3 - British 4 - French 5- German 6 - Italian
monitor	2	Type of Moniter: 1 - Monochrome 2 - Greyscale 3 - Color
lang	ENGLISH	Language Evaluated by MAKEMSG.EXE. The value is open ended and simply needs to coincide with the file names of the message file. The Default is English.

Many of the parameters lited in the table determine the color of items. Since the color depends on the screen being used - monochrome, greyscale or color - the defaults depend on the monitor. The table below lists the defauls for each monitor type.

Field	Monitor=1	Monitor=2	Monitor=3
menuboxd	"W/N"	"W/G"	"BG/B"
menubox	"W+/N"	"W+/G"	"W+/B"
menuboxh	"N/W"	"N/W"	"W+/BG"
menubar	"N/W"	"W+/BR"	"W+/BG"
menubarh	"W+/N"	"N/W"	"N/W"
statbar	"N/W"	"W+/BR"	"W+/BG"
backcol	"W/N"	"BG+/N"	"W+/N"
boxcol	"W+/N"	"W+/B.N/W"	"W+/R"
boxhigh	"N/W"	"N/W"	"N/W"
errcol	"N/W"	"N/GR"	"N/R"
pickcol	"W+/N"	"W+/B"	"W+/GR"
pickhigh	"N/W"	"N/W"	"N/W"
pickdim	"W/N"	"W/B"	"GR+/GR"

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lightcol	"N/W"	"N/GR"	"W+/R"
unhigh	"W+/N"	"W/N"	"G+/G"
grphigh	"N/W"	"N/W"	"GR+/R"
grpget	"W/N,W+/N,,,W+/N"	"W/N,W+/N,,,W+/N"	"B+/W,B/W...B/W"
detnigh	"N/W"	"N/W"	"GR+/R"
detget	"W/N,W+/N,,,W+/N"	"W/N,W+/N,,,W/N"	"B+/W,B/W...B/W"
sumhigh	"N/W"	"N/W"	"GR+/R"
sumbar	"W+/N"	"W+/N"	"B+/W"
repget	"W/N"	"N/W"	"GR+/B"
rephigh	"N/W"	"W/N,W+/N,,,W+/N"	"B+/W,B/W...B/W"
seicolor	"N/W"	"W+/B"	GR+/B"
relcol	"N/W"	"W+/B"	GR+/R"

Health Configuration Items

The following chart lists all the Health parameters in ProMIS:

Code	Default	Description
imnicol	See Color Chart	Immunization Individual Input Box color
imnitop	5	Immunization Individual Input Box top row
imnileft	30	Immunization Individual Input Box left col
Imnrcol	See Color Chart	Immunization Input Roster Box color
Imnrtop	6	Immunization Input Roster Box top row
Imnrleft	0	Immunization Input Roster Box left col
imnfemyg	15	Women's Tetanus minimum age
imnfemod	50	Women's tetanus maximum age
imnkidod	60	Immunization maximum age
imnchar	R	Char In immunization to represesnt recieved
groIcol	See Color Chart	Growth Promotion Individual Input Box color
groItop	5	Growth Promotion Individual Input Box top row
groIleft	30	Growth Promotion Individual Input Box left col
groRcol	See Color Chart	Growth Promotion Input Roster Box color
groRtop	6	Growth Promotion Input Roster Box top row
groRleft	0	Growth Promotion Input Roster Box left col
groage	60	Growth Promotion maximum age
groblnk	5	Number of blank entries for individual growth promotion data entry
pregmax	10	Number of pregnancy entries to display
pregcol	See Color Chart	Pregnancy Input Box color
pregtop	5	Pregnancy Input Box top row
pregleft	10	Pregnancy Input left column
orsflds	See Below	Fields to use in output roster
orsgro	2	Maximum number of weights in Growth Promotion Output roster
orsgrobl	3	Number of blank spaces in Growth Promotion Output roster
deatop	5	Cause of Death Input Box top row
dealeft	30	Cause of Death Input Box left column
deacol	See Color Chart	Cause of Death Input Box color
cspmax	10	Maximum number of child spacing items to display
cspitop	5	Child Spacing Input Box top row
cspileft	10	Child Spaceing Input Box left column
cspage	15	Child Spacing Input minimum age
cspold	49	Child Spacing Input Maximum age
cspicol	See Color Chart	Child Spacing Input Box color
ortitop	5	ORT Input Box top row
ortileft	30	ORT Input Box left column

ortage	15	ORT Minimum age
orticol	See Color Chart	ORT Input Box color
icrflds	See Below	Fields to use to calculate imunization coverage rate
hadtop	5	Health Administration Input Box top row
hadleft	5	Health Administration Input Box left column
hadcol	See Color Chart	Health Administration Input Box color
gflimit	2	Limit - in months - for growth faltering calculation
gnwlimit	2	Limit - in months - for not regularly weighed calculation
wforatbl	MOH	Weight for Age table to use
hfocode	See Below	List of codes for health module

The default values for some of the items will not fit easily into the table above. Those items are listed here:

Item	Default
orsflds	H_BCG,H_DPT1,H_DPT2,H_DPT3,H_OPV1,H_OPV2,H_OPV3,H_MEAS
icrflds	H_BCG,H_DPT1,H_DPT2,H_DPT3,H_OPV1,H_OPV2,H_OPV3,H_MEAS
hfocode	H_PTYP,H_PBA,H_PLOC,H_DEA,H_CSP

Many of the parameters lited in the table determine the color of items. Since the color depends on the screen being used - monochrome, greyscale or color - the defaults depend on the monitor. The table below lists the defauls for each monitor type.

Field	Monitor=1	Monitor=2	Monitor=3
g_imnicol	W+/N,N/W	R/W,W/R	GR+/B,B/W
g_imnrcol	W+/N,N/W	R/W,W/GR	GR+/R,B/W
g_groIcol	W+/N,N/W	R/W,W+/R	GR+/B,B/W
g_groRcol	W+/N,N/W	R/W,W+/R	GR+/R,B/W
g_pregcol	W+/N,N/W	R/W,W+/R	GR+/B,B/W
g_deacol	W+/N,N/W	R/W,W+/R	GR+/B,B/W
g_cspicol	W+/N,N/W	R/W,W+/R	GR+/B,B/W
g_ortIcol	W+/N,N/W	R/W,W+/R	GR+/B,B/W
g_hadcol	W+/N,N/W	W+/R	GR+/B,R/W

R E S U M E

NAME: James Edward Sarn

CITIZENSHIP: United States of America

EDUCATION:

1973 Duke University Medical School
Durham, North Carolina
Doctor of Medicine

1972 School of Public Health
University of North Carolina
Chapel Hill, North Carolina
Master of Public Health, Administration

1963 United States Military Academy
West Point, New York
Bachelor of Science

MEDICAL LICENSES: State of Arizona and State of North Carolina

LANGUAGES: English - Fluency
Spanish - Intermediate Fluency
French - Basic Literacy and Conversation
Arabic - Basic Expressions

WORK EXPERIENCES:

July 1991 to Present
Deputy Assistant Secretary for International and Refugee Health
Public Health Service (PHS)
Department of Health and Human Services (DHHS)
Washington, D.C.

International health policy, program planning and project management for bilateral and multilateral programs and refugee health programs.

Major Activities: As Deputy Assistant Secretary: represents and speaks for the Assistant Secretary of Health, the Surgeon General and the Secretary of Health on international health matters; develops policy positions; and, in the absence of the Secretary and Deputy Assistant Secretary, represents the United States Government before the governing bodies of the World Health Organization, Pan American Health Organization, the United Nations Children's Fund and other health-related agencies of the United Nations system. As Director of the Office of International and Refugee Health manages and coordinates: $36 million portfolio of 40 PHS international health projects in more than 50 developing countries; PHS refugee health program which provides resources and services for medical screening, follow-up and preventive care for approximately 125,000 refugees annually; and the negotiation of bilateral health agreements between foreign governments and DHHS/PHS.

1987 - 1991
Director, Health and Nutrition Office
Agency for International Development
Cairo, Egypt

National health planning and management of $220 million portfolio (27 projects) in health and nutrition.

Major Activities: National Child Survival Project - countrywide immunization coverage, acute respiratory illnesses, MCH services and child spacing programs; National Control of Diarrheal Disease Program - countrywide implementation of ORS/ORT (Oral Rehydration Salts/Oral Rehydration Therapy) activities; Urban Health Delivery Program - hospital and clinic construction, rehabilitation and service delivery systems for Cairo and Alexandria; Community Medicine Program - development of Egypt's first community medicine curriculum and school at Suez University; Cost Recovery Program - management information systems for the 3.5 million member Health Insurance Organization for workers, loan guarantees for private physicians practicing in areas of medical need and introduction of cost recovery systems into government hospitals; Project Hope Nursing Education Program - improved curriculum and faculty training for university trained nurses; and the Cooperative Health Program - 17 basic science and service delivery research projects between U.S. and Egyptian university and government researchers.

1985 - 1987
Director, Health, Population and Nutrition Office
Agency for International Development
Khartoum, Sudan

National health planning and management of $40 million portfolio (16 projects) of emergency drought relief and development assistance programs.

Major Activities: Feeding and Emergency Health Programs - feeding programs and health services for 7.5 million famine and war refugee victims; Primary Health Care Program - child survival programs for Western and Southern Sudan; Schistosomiasis Control Program - technical assistance and commodities for the parasitic control efforts in irrigated agricultural areas; National ORT Program; National Family Planning Program; Private Voluntary Program - policy and financial support for CARE, Save the Children U.S. and U.K., Medicine Without Frontiers, OXFAM, CARITAS, ADRA and World Vision.

1983 - 1985

Agency Director for Health and Population
Agency for International Development
Washington, D.C.

Management and planning of $160 million annual budget of AID/Washington offices and contractors to support worldwide research and delivery programs in 70 countries.

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Major Activities: Primary Health Care Support Programs; Tropical Disease Research Programs; Operations Research Programs; Contraceptive Research Programs; Health Education, Mass Media and Social Marketing Programs; and Commodity Procurement and Distribution Programs.

1980 - 1983
Director
Arizona Department of Health Services
Phoenix, Arizona

Management of $140 million annual budget and 1700 person staff for statewide health services.

Major Activities: Health Systems and Health Resources Development; Statewide Medicaid Program with Prepaid Health Maintenance Organization Component; Environmental Health Protection and EPA/State Regulatory Programs; Community and Behavioral Health Service Delivery Programs; Health Prevention and Promotion Programs; Disease Control Programs; Maternal and Child Health Services; State Mental Health Hospitals and Institutions; Hospital Cost Regulation; Nursing Home and Elderly Care Monitoring and Regulation; and Statewide Ambulance and Emergency Care Training, Monitoring and Regulation.

1978 - 1980
Director, Division of Disease Control Services
Arizona Department of Health Services
Phoenix, Arizona

Management of statewide programs and staff for communicable diseases, environmental sanitation and state laboratory services.

Major Activities: Management and coordination of the Bureau of Laboratory Services, Bureau of Disease Prevention and Epidemiology, Cancer Registry, Bureau of Venereal Disease Control and Bureau of Sanitation and Food Control. Designation as State Epidemiologist and health department representative on the Arizona Agriculture and Horticulture Commission and the Arizona-Nevada-Utah Commission on Radiation Effects of Nuclear Weapons Testing.

1978
Health Consultant
International Nickel Company of Canada
Guatemala City, Guatemala

Major Activities: One week consultation to evaluate the preventive, clinic and hospital services for mine and smelter workers, families and adjacent communities for the El Estor nickel facilities.

1974 - 1978
Director, Health, Population and Nutrition Office
Agency for International Development
Managua, Nicaragua

Major Activities: Maternal and Child Health Program; Environmental Health Program; Village Potable Water Program; Nutrition Improvement Program; Family Planning Program; Malaria Control Program; National Health and Environmental Planning Program; Media Based Health Education Program; and Medical Health Service Restoration (Earthquake Recovery) Program.

1977 - 1985
Short-Term Advisor
Agency for International Development
Washington, D.C.

Major Assignments:
Peru (1985) - consultation and discussions with Government of Peru on implementation of primary health care programs.

El Salvador (1984) - consultation with Government of El Salvador and preparation of grant documents for refugee health programs.

Guatemala (1980) - consultation with the Government of Guatemala and preparation of grant documents for primary health care programs.

Bolivia (1978) - consultation with the Government of Bolivia and preparation of grant documents for primary health care programs.

El Salvador (1977) - consultation with the Government of El Salvador and preparation of grant documents for primary health care programs.

1973 - 1974
Resident, Department of Community Medicine and Family Practice
Duke University Medical School
Durham, North Carolina

Major Assignments: Hospital Patient Care; Emergency Room Patient Care; Private Patient Care; and Development and Management of Private Clinic and Group Practice.

1972 -1973
Assistant Health Officer
Durham County Health Department
Durham, North Carolina

Major Assignments: Budget Preparation; Program Evaluation; Facility Design and Utilization; and Clinical Care.

1971 - 1972
Chairman
International Health Committee
Student American Medical Association
Chicago, Illinois

Major Assignments: Management of the Medical Student Exchange Program involving medical schools and students in the U.S., Canada, Europe and Australia.

1963 - 1968
Officer, U.S. Army
Department of Army
Washington, D.C.

Major Assignments: Civic Action Officer, 9th Vietnamese (ARVN) Infantry Division; Infantry Battalion Advisor, 9th ARVN Division; Infantry Company Commander, 82nd Airborne Division; Brigade Maintenance Management Officer, 82nd Airborne Division; Aide de Camp, Commander of U.S. Forces in the Dominican Republic; and Platoon Leader, 82nd Airborne Division.

OTHER SELECTED ACTIVITIES:

Member, U.S. Delegation (1992, 1991, 1984)
World Health Assembly
Geneva, Switzerland

Member, U.S. Delegation (1992, 1991)
Executive Committee
World Health Organization
Geneva, Switzerland

Member, U.S. Delegation (1992, 1991)
Executive Board and Assembly
Pan American Health Organization
Washington, D.C.

Member, U.S. Delegation (1992, 1991)
Governing Council
Western Pacific Regional Office, WHO
Manila, Phillipines

Member, U.S. Delegation (1992)
International Conference on Nutrition
Food and Agriculture Organization and World Health Organization
Preparatory Meetings in Copenhagen and Geneva
Conference in Rome, Italy

Board of Directors (1992, 1991, 1985, 1984)
National Council of International Health
Washington, D.C.

Advisory Panel Member (1992 to present)
International Communication Enhancement Center
Tulane School of Public Health and Tropical Medicine
New Orleans, Louisiana

Adjunct Professor (1981-1988)
University of Arizona Medical School
Tucson, Arizona

Executive Committee (1980-1983)
Arizona Medical Association
Phoenix, Arizona

Board of Directors (1980-1983)
Esperanza (International Health Care)
Phoenix, Arizona

Chairman and Trustee (1980-1983)
Arizona State Hospital
Phoenix, Arizona

Executive Committee (1980-1983)
Arizona-Sonora (Mexico) Commission
Phoenix, Arizona

Member (1979-1982)
Arizona Atomic Energy Commission
Phoenix, Arizona

Board of Directors and Governing Board (1972-1987)
Verde Valley School (College Preparatory School)
Sedona, Arizona

County Delegate (1972)
North Carolina Medical Society
Durham, North Carolina

Governing Council Member (1971-1972)
Student American Medical Association
Chicago, Illinois

Class President and Treasurer (1969-1972)
Duke Medical School
Durham, North Carolina

SELECTED PUBLICATIONS/PRESENTATIONS:

U.S. Public Health Priorities Along the U.S. - Mexico Border. Environmental Health Conference, Arizona - Sonora Commission, Nogales, Arizona, October, 1992.

U.S. Public Health Priorities. New Jersey Rotary International Conference, Atlantic City, New Jersey, October, 1992.

Weber, J.T. et al. Botulism in Egypt. Journal of Infectious Diseases, Accepted for Publication and In Print (October, 1992), Manuscript #JID-920717.

International Health Priorities. National Council of International Health, Alexandria, Virginia, June, 1992.

Research Priorities for Diarrheal Disease Control. National Control of Diarrheal Disease Research Conference, Ministry of Health, Alexandria, Egypt, October, 1989.

Emergency Health in International Development Programs. International Conference on Emergency Health Care Development, Alexandria, Virginia, August, 1989.

Khallaf, N., Madkour, S. Pio, A. and Sarn, J. National Acute Respiratory Disease Program. Ministry of Health, Cairo, Egypt, 1989.

Cost Recovery Programs for Health. Project Paper, Agency for International Development (No. 263-0170), Washington, D.C., September, 1988.

Alpen,E.L., Mosley, R.D. et al. Dose Assessment Advisory Group, Final Report. Department of Energy, Las Vegas, Nevada, May, 1987.

Methods to Expand Uses of Oral Rehydration Therapy: Social Marketing. American Public Health Association, Anaheim, California, November, 1984.

Issues for Universities in Preparing Programs for International Health Funding. Conference on Universities and International Health, National Council of International Health, Chapel Hill, North Carolina, September, 1984.

Science and Technology Progress for Primary Health Care. International Health Officers Conference, Agency for International Development, Gettysburg, Pennsylvania, June, 1984.

Strategies for International Health Programs. Annual Meeting, Association of Schools of Public Health, Charleston, South Carolina, April, 1984.

Status of Health Care Systems in Developing Countries and the Potential of the Private Sector. U.S. Corporations and International Health Conference, National Council of International Health, Newport Beach, California, December, 1983.

Priority International Health and Population Issues. XXXI Annual Meeting, Medical Society of the United States and Mexico, Morelia, Mexico, October, 1983.

Primary Health Care and Family Planning. Assembly of Public Health Officials, Lima, Peru, October, 1983.

Arizona Morbidity. Co-Editor, 21 Articles prepared with staff for publication, Vol. 4, No.7 (1973) through Vol. 5, No. 7 (1980). Examole Articles: Human Diploid Cell Vaccine (Rabies); Reactions to Vaccination; Influenza Vaccine 1980-1981; Reported Teen Age Venereal Disease Cases for 1970 to 1979; Chemotherapy of Plague; Day Care Center Associated Hepatitis; and Health Effects of Urea Formaldehyde Foam.

Aflatoxin Contamination of the Food Chain. Annual Conference, United States - Mexico Border Health Association, Saltillo, Mexico, April, 1980.

Health Effects of Asbestos. Arizona County Health Directors Conference, Tucson, Arizona, June, 1980.

Epidemiology of Nosocomial Infections. Arizona Infection Control Association Conference, Scottsdale, Arizona, October, 1979.

Congenital Syphilis in Border States. Annual Conference, United States - Mexico Border Health Association, San Diego, California, April, 1979.

Health Planning for Small Communities. Ministry of Health (Spanish, 38 pages), Managua, Nicaragua, June, 1977.

Textbook for Rural Health Workers. Ministry of Public Health (Spanish, 180 pages), Managua, Nicaragua, June, 1977.

Health Sector Assessment for Nicaragua. Agency for International Develooment (281 pages), Washington, D.C., February, 1976.

SELECTED GRANT APPROVALS:

Health and Human Resources Analysis for Africa
Grant for Public Health Service, DHHS
Agency for International Development, September, 1992 ($2.8 million)

Cooperative Health Program
Grant for Government of Egypt
Agency for International Development, April, 1991 ($3.2 million)

Cost Recovery Programs for Health
Grant for Government of Egypt
Agency for International Development, October, 1988 ($95 million)

Control of Diarrheal Diseases
Grant for Government of Egypt
Agency for International Development, September, 1988 ($10 million)

Child Survival
Grant for Government of Sudan and UNICEF
Agency for International Development, May, 1987 ($1.5 million)

Cost Reimbursement Systems
Grant for Government of Sudan and WHO
Agency for International Development, May, 1987 ($450,000)

Sudan Emergency Health Relief Program
Grant for Government of Sudan
Agency for International Development, October, 1985 ($3 million)

Integrated Data Base Management Systems
Grant for Arizona Department of Health Services
Centers for Disease Control, DHHS, September, 1980 ($400,000)

MCH and Midwife Training
Grant/Loan for Government of Nicaragua
Agency for International Development, November, 1977 ($1.3 million)

Nutrition Improvement Program
Grant/Loan for Government of Nicaragua
Agency for International Development, November, 1977 ($400,000)

Management Improvement Program
Grant/Loan for Government of Nicaragua
Agency for International Development, January, 1977 ($472,000)

Rural Health Development Program
Grant/Loan for Government of Nicaragua
Agency for International Development, January, 1977 ($5 million)

Rural Health Planning and Education Program
Grant for Government of Nicaragua
Agency for International Development, November, 1975 ($385,000)

HONORS:

Arthur S. Fleming Award Nomination
Outstanding Manager, Agency for International Development
Washington, D.C.

Pergamino of Honor for Meritorious Service
Ministry of Health, Government of Nicaragua

Mosby Scholarship Award, Scholastic Excellence
Duke University Medical School, Durham, North Carolina

Medal of Honor, First Class
Government of Vietnam

Peacemaker Medal
Government of Brazil

U.S. Armed Forces
Bronze Star with Oak Leaf Cluster
Joint Service Commendation Medal
Vietnamese Service Medal
Dominican Republic Service Medal

MEMBERSHIPS:

American College of Preventive Medicine
Washington, D.C.

American Medical Association
Chicago, Illinois

American Public Health Association
Washington, D.C.

American Society of Tropical Medicine
Mc Lean, Virginia

National Council of International Health
Washington, D.C.

CURRENT HOME ADDRESS:

James E. Sarn, M.D., M.P.H.
6627 Fletcher Lane
Mc Lean, Virginia 22101

NAZMUL HASAN KHAN

7 Post Road West
Westport CT 06880

Home (203) 221-0428
Business (203) 221-4070

Expertise: Monitoring and evaluation, statistical analysis of data, health/population-based information system, systems analysis and design, systems development and maintenance, PC based user support and training, electronic data processing.

Present Position: Information Systems Specialist
Health Unit
Save The Children
Since April 1, 1993.

Achievements: Collected and analyzed data for the following studies of health and demographic indicators during seven years of Child Survival programming using Program Management Information System (PMIS)- a population-based, computerized information system of the Bangladesh Field Office:

- analysis of neonatal mortality by days of age, gender and immunization status of mother
- analysis of post neonatal and child mortality by gender, month of age, exposure to Child Survival interventions, and socioeconomic status
- analysis of fertility rates and contraceptive use in relation to education and participation in women's savings groups
- case/control studies on the effect of BFO nutrition interventions

Assembled technical documentation to assist programmers in installing, operating and maintaining ProMIS - a population based information system developed centrally by Save the Children.

Experience:

Feb 1990 -: Mar 1993
Computer Systems Manager
Save the Children
Bangladesh Field Office
Dhaka, Bangladesh.

Achievements: Worked in the capacity of MIS Section Chief and reported to the Field Office Director. Designed, developed and maintained a population-based, multi-sectorial, computerized Program Management Information System (PMIS).

Developed indicators for supervision and management control, medium term outcome of the program in Bangladesh and long term impact on the target project participants.

Designed instruments for data collection and recording, developed protocols for data communications at different levels of management.

Conducted statistical analysis of data gathered through the PMIS databases for the purposes of program monitoring and operations research.

Prepared and updated the system documents including protocols for data flow, program listing, coding plan and the operators' manual.

Oct 1989 - Jan 1990	M&E Consultant INTERCHAIN Project Consultants AB Dhaka, Bangladesh.
Achievements:	Designed a monitoring and evaluation system for Norwegian Agency for International Development (NORAD) and Bangladesh government sponsored credit line project for micro enterprise development (NORAD-BGD 041) with objective of generating employment through development of informal sector in Faridpur and Madaripur district of Bangladesh. Tested the system with a sample data of 250 projects funded through NORAD-BGD 020. Documented the system through preparation of M&E manual.
Mar 1988 -: Sep 1989	Systems Officer (MIS) Micro Industries Development Assistance Society (MIDAS) Dhaka, Bangladesh
Achievements:	Worked as Chief of MIS for MIDAS - a USAID funded project in Bangladesh to generate off farm employment through development of micro enterprises. Prepared periodic MIS reports for the top management. Assisted departmental heads in preparing five year/annual development plan and budget. Coordinated flow of information among the major operational divisions. Conducted systems analysis, design and structured development for a low cost and efficient information systems for MIDAS.
Jul 1986 -: Feb 1988	Junior Project Management Officer Micro Industries Development Assistance Society (MIDAS) Dhaka, Bangladesh.
Achievements:	Worked for developing micro enterprises for MIDAS through technology sourcing, market research and financial appraisal. Conducted data processing, analysis and report writing for the consultancy projects using standard commercial application packages such as SPSSPC+, dBASE III Plus, Lotus 1-2-3, MS Project, etc. Plot diagrams, charts and other presentation materials using X-Y plotter.
Systems Developed:	Program Management Information System (PMIS) for Save the Children, Bangladesh Field Office. Major outputs include demographic breakdown of the population, death rates (IMR, CMR, U5MR, CDR), birth rates (ASFR, TFR, CBR), coverage rates (EPI, TT, CPR, GMP), degrees of malnutrition of the children, household socioeconomic category based on a set of pre-defined SE variables. Micro Enterprise Monitoring System for MIDAS - a USAID assisted micro enterprise promotion project in Bangladesh. It systematically monitors the small and micro enterprises financed through MIDAS by keeping track of their financial and physical performances. Major outputs include implementation progress, financial ratios, loan recovery status, aging of overdue, etc. SSE M&E System - NORAD/BGD 041 for NORAD SSE Credit Line Project 041 Bangladesh for monitoring and evaluation of small scale enterprise funded through commercial banks, NGOs and other development financial institutions. It produces outputs like application processing status, legal documentation, implementation progress, physical and financial performance, etc. SSE M&E System - NORAD/BGD 020 for INTERCHAIN Project Consultants AB - a Swedish consulting firm engaged in mid-term evaluation of a project titled "NORAD SSE Credit Line Project 020 Bangladesh" and is similar to the one stated above. This package keeps track of disbursements, repayments, due, overdue, etc. of all the enterprises assisted through four nationalized commercial banks.

SSE Appraisal System for Save the Children, Bangladesh Field Office to appraise the small and micro enterprises under the Economic Development Program. The system takes inputs as various assumptions relating to costs, expenses, revenues, and produces outputs such as profit & loss, break-even, cost benefit ratio, internal rate of return, cash flow, etc.

Consultancy: Worked as Computer Consultant for a research project titled "Women's Savings Groups and Contraceptive Use Under SAVE Program" done jointly by SC/US and University Research Corporation (Bangladesh).

Worked as Data Analyst for the MotherCare project of SC/US. Conducted data analysis on the "Study on Causes of Stillbirth and Neonatal Death" and "Survey of Mid Upper Arm Circumference" part of the project.

Worked as Data Processing Expert in a consultancy project titled "Analysis of Baseline Data for Integrated Development of Rural Women and Children Through Co-operative Project" for UNICEF through MIDAS.

Worked as Data Processing Supervisor for a consultancy project titled "Situation Analysis of Patuakhali and Barguna District" for DANIDA through MIDAS.

Worked as Computer Consultant in a research project titled "Socioeconomic Analysis of Demand and Supply Parameters of Rural Sanitation" for SDC/UNICEF through [illegible] CHAIN Project Consultants AB

Programming Known:

GW BASIC	R/BASIC
Turbo C++	dBASE IV
FoxPro	CLIPPER

Packages Used:

SPSS PC+ 4.0	dBASE IV 1.5
FoxPRO 2.0	Revelation G
Clipper 5.0	Advanced Revelation 2.12
Lotus 1-2-3 3.1	MS Word for Windows
Quattro Pro 4.0	MS Word 5.0
TIMELINE 4.0	WordPerfect 5.1
EPI INFO 5.1	Harvard Graphics 3.0
PC Tools 8.0	Norton Utilities 7.0

Operating Systems Used:

MS DOS 6.0	Windows 3.1
PICK	ROS
NetWare 3.1	Finder 6.0

Education: MBA with major in Quantitative Business Analysis (QBA), University of Dhaka, Dhaka, Bangladesh, 1986.

Bachelor of Science, Jahangirnagar University, Savar, Dhaka, Bangladesh, 1983.

Personal Data:

Date of birth	:	June 15, 1960
Marital Status	:	Married
Children	:	One son

References: Will be provided on request.

SAVE THE CHILDREN
Pipeline Analysis

Appendix 6

COOPERATIVE AGREEMENT OTR-0500-A-9149

CHILD SURVIVAL V: HEADQUARTERS

21-Oct-93

BUDGET VS. ACTUALS FOR YEAR 4 AND TOTAL EXPENSES TO DATE VS. TOTAL GRANT *

HEADQUARTERS SPECIAL PROJECTS

				YEAR 4: EXPENSES VS. PLANNED BUDGET *				PLANNED BUDGET YEAR 5	LIFE OF GRANT: CUM TOTAL VS. TOTAL GRANT *			
Procurement	EXPENSES YEAR 1	EXPENSES YEAR 2	EXPENSES YEAR 3	EXPENSES 07/31/93	PLANNED BUDGET ***	BALANCE	% SPENT		CUMULATIVE TOTAL ACTUALS	PLANNED BUDGET***	BALANCE	% SPENT
Supplies**	2,772.06	2,448.32	1,643.98	1,051.55	15,000.00	13,948.45	7.0%	11,626.00	7,915.91	33,490.36	25,574.45	23.6%
Assets**	4,422.00	10,790.00	0.00	0.00	5.00	5.00	0.0%	0.00	15,212.00	15,217.00	5.00	100.0%
Consultants	4,770.50	2,001.73	10,520.00	5,162.00	20,000.00	14,838.00	0.0%	30,000.41	22,454.23	67,292.64	44,838.41	33.4%
Sub-Total:	11,964.56	15,240.05	12,163.98	6,213.55	35,005.00	28,791.45	17.8%	41,626.41	45,582.14	116,000.00	70,417.86	39.3%
Evaluation	0.00	0.00	3,200.91	51.91	51.91	0.00	0.0%	3,747.18	3,252.82	7,000.00	3,747.18	46.5%
Other Program Costs												
Personnel	34,504.37	115,201.03	43,518.39	87,548.37	174,000.00	86,451.63	50.3%	120,007.00	280,772.16	487,230.79	206,458.63	57.6%
Travel	479.00	4,303.98	10,875.70	4,804.38	15,000.00	10,195.62	0.0%	20,000.00	20,463.04	50,658.66	30,195.62	40.4%
Other	5,241.07	17,267.72	7,270.40	7,313.80	10,000.00	2,686.20	73.1%	10,070.36	37,092.99	49,849.55	12,756.56	74.4%
Sub-Total:	40,224.44	136,772.71	61,664.49	99,666.55	199,000.00	99,333.45	50.1%	150,077.36	338,328.19	587,739.00	249,410.81	57.6%
TOTAL	52,189.00	152,012.76	77,029.38	105,932.01	234,056.91	128,124.90	45.3%	195,450.95	387,163.15	710,739.00	323,575.85	54.5%
Technical Asst./ Other Program Costs								HEADQUARTERS TECHNICAL ASSISTANCE				
Personnel	2,341.97	32,301.21	36,446.52	35,031.88	64,000.00	28,168.12	50.0%	53,761.00	106,921.58	188,850.70	81,929.12	56.6%
Travel	19,908.53	36,583.63	17,236.36	22,030.14	31,000.00	8,969.86	71.1%	15,000.00	95,758.66	119,728.52	23,969.86	80.0%
Other	580.98	3,752.22	449.18	2,706.44	8,000.00	5,293.56	33.8%	500.40	7,488.82	13,282.78	5,793.96	56.4%
TOTAL	22,831.48	72,637.06	54,132.06	60,568.46	103,000.00	42,431.54	58.8%	69,261.40	210,169.06	321,862.00	111,692.94	65.3%

* Final expenses for Year 3; Year 4 expenses through: 07/31/93

** Assets are individual items $500 and over. Supplies are individually under $500 per item.

*** LOG Revised Budget approved 4/28/92. Year 4 includes balances from Year 3.

Year 1 = Sept. 1, 1989 – Aug. 31, 1990
Year 2 = Sept. 1, 1990 – Aug. 31, 1991
Year 3 = Sept. 1, 1991 – Aug. 31, 1992
Year 4 = Sept. 1, 1992 – Aug. 31, 1993
Year 5 = Sept. 1, 1993 – Aug. 31, 1994

LINE ITEM FLEXIBILITY: No flexibility between Procurement, Evaluation and Other.
100% flexibility within each group.

Date: September 14, 1992

To: Warren Berggren

From: Ken Herman

Re: CS5 MTE Report

I have read the current draft of the CS5 Midterm Evaluation Report and I am quite distressed by the general tone and the number of inaccuracies in it, particularly as they relate to the operation and functioning of ProMIS. In the attachment to this note I have attempted to address many of these errors, however there are too many for me to comment upon for now. At a later date we can discuss the ones not mentioned in the attachment. I strongly believe the report needs many changes before being widely distributed. I hope you will find my comments, which are attached to this memo, useful in this endeavor.

It is quite clear from the report that the evaluation was principally an evaluation of ProMIS. While I feel that evaluating the system is a useful endeavor, the evaluation missed an important point. That is, does the ProMIS software package meet the original specifications. Nowhere in the report is there mention that a detailed specification for ProMIS exists. As you know, the specification for any software package, especially one as complex as ProMIS, acts as a blueprint. If the needs of the field offices are not being met by the software, then the problem is either (a) the blueprint is flawed or (b) the software doesn't match the blueprint. The evaluation report addresses neither of these. Hence the specification document should not be ignored. Nor should it be forgotten that ProMIS was developed jointly by the Health Unit and the PC Group, with a distinct division of labor between the two departments. The Health Unit is responsible for the ensuring the system is designed and used properly and the PC Group is responsible for seeing that the software functions properly. To me the report seems to lay the burden of use and technical support on the PC Group.

On the whole, my expectation of the report differed greatly from what was produced. I expected to see a list of additions to ProMIS that would allow the software to be more useful to the field offices. These additions were to form the basis of any new software development. The recommendations section of the report mentions a few such modifications, but falls short in the details. For example, the body of the report (page 8) indicates that ProMIS does not produce reports required by the Project Director in Mali, but fails to indicate what these reports might be. A more useful evaluation report would have provided these level of detail.

Regardless of the final disposition of the report, I believe that it's important to move ahead and decide upon next steps. In this light I recommend the following:

1. A procedure be developed by the Health Unit, together with the PC Group, whereby all ProMIS support questions are passed through the Health Unit. This is in keeping with Agency policy. We do this successfully with the Field Office Sponsorship software (FOSMS), which is a system that is supported centrally by the PC Group. All questions from the field first come to the Sponsorship Services department who answer all user questions.

Any technical questions are passed on tot he PC Group. For ProMIS support, an individual within the Health Unit needs to be selected as HIS Point Person, who will oversee all aspects of ProMIS use and development. The PC Group has requested that this happen for 2 years, but without success.

2. The PC Group immediately begin evaluating commercially available software packages that are capable of reporting data from dBase files. A number of these packages exist (Alpha 4, R&R Report Writer, Approach for Windows, etc.) and one of them might be capable of providing the easy-to-use, generic data extraction that the Health Unit feels is required. These packages can produce reports as well as extracting data from the files. Failing the identification of a package, the PC Group, working with the Health Unit, will specify and develop software to satisfy this need.

3. The specifications for a "generic" module should be finalized so that development can begin. This generic module would allow all field offices to store whatever data they like within the framework of ProMIS. The structure of the data would be very simple, being only a code of some kind and a date. This could be used to store participation in programs, individual socio-economic indicators, etc. The benefit of such a module is that the field office can decide what needs to be stored. A list of generic rosters and reports could be developed to satisfy some basic reporting needs The software from recommendation 1 will provide more detailed reporting.

4. Work should begin soon on a multi-user edition of ProMIS. Doing this will allow more than one PC to update the data files.

5. A list of additions to ProMIS should be developed by the Health Unit. This list can include anything (additional data items, reports, etc.) that the Health Unit would like to see added to ProMIS. The list should be prioritized so that the PC Group can address the most critical needs first. (The PC Group has been requesting such a list for almost a year, with no response from the Health Unit.)

6. A list of WCI indicators and reports should be compiled and prioritized to ensure that the needs of this program are being met.

7. The Health Unit should develop a user guide to ProMIS, which describes the operation of the software package within the HIS program. This "Guide to Using ProMIS" is different from the ProMIS Manual developed by the PC Group in that it addresses procedures for working with HIS data.

Nothing in the report, nor in my experiences working with the field offices, has indicated to me that there are major problems with ProMIS. Certainly there are improvements that can be made. Certainly there are some technical be problems to be solved. Certainly the software is not everything to everyone - it was never meant to be. If, however, we look at the core functioning of the software - does it do what it was designed - there is no denying that the software has been a success on many fronts. While I wish the report had focused more on the positive aspects of the software, we very much need to move ahead and work towards making the system even better than it is.

Comments and Inaccuracies in the CS5 MTE Report

2.1: Descriptions of Computerized HIS

By using Clipper and dBase files, making additions in the field to the system is much easier than indicated in the report. While it's not possible to modify the actual ProMIS software, new files can be added and integrated into the system easily and effectively by anyone familiar with the dBase programming language.

2.2: System' Functioning

"In 1989, the difficulties of PMIS were similar to those of ProMIS today." This statement alone indicates a complete lack of understanding of the reasoning behind moving away from PMIS. Many technical problems with PMIS were well documented and the agency spent a significant amount of funds determining whether to make the change. It should be noted that ProMIS does not suffer from nearly the number of problems that plagued PMIS. I have distinct recollections of the designer of PMIS flying between Sudan, Zimbabwe and Bangladesh for weeks at a time while various technical problems were sorted out. Nothing of the kind has ever been required of ProMIS since its initial installation over two years ago. Sure, there might be some problems with the software but nothing that has crippled the data entry or analysis process.

"For example, in PMIS then and ProMIS now, only the data entry skill was imparted to the FO." This is just plain wrong. Training in the use of ProMIS always included producing reports.

Tables took too long to produce. All reports in ProMIS take less time (on equivalent hardware) than PMIS.

Some other facts that were ignored: ProMIS installation took fully half the time of PMIS. I personally installed PMIS in Malawi, a process which took over 6 weeks and required the assistance of the original programmer. ProMIS was installed in Mali in less than three weeks. ProMIS was installed in Burkina Faso by a member of the Health Unit staff, who is not a programmer. It's clear that across the board ProMIS has proven itself to be more flexible and mindful of the Agency's limited resources.

2.3: Infrastructure:

"They know only how to enter data." I am not sure what is meant by this. The staff in Mali were trained on how to produce reports.

At this point, I would like to point out that while ProMIS was being developed, a detailed survey was sent to many field offices asking them what reports they would find useful. The reports generated by ProMIS is the result of that survey. Finally, there are a myriad of options available to the ambitious field office for producing reports outside of ProMIS, using dBase or any one of a number of commercially available products that report on dBase data files.

2.4 Inputs and Outputs:

"In MFO, output reports were not generated by computer because the initial data entry is not complete." I confess that I don't fully understand the rationale behind this statement. Is the claim being made that none of the reports are useful until all the data entry is complete? Certainly those villages that are complete can have reports produced for them.

"...MFO will find that the tables produced by ProMIS are not the same as the 15 tables Dr. Fode, the project director, prepares." My response to this is - where are the specifications for the 15 tables prepared by Dr. Fode? The PC Group depends upon the Health Unit to provide this feedback and leadership.

"For example, ProMIS produces demographic and coverage rates for a one year period while Dr. Fode reports achievements by month and on a biannual basis." It is my understanding that coverage rates, by their nature, must have one year's worth of data in order to be calculated. I think we are comparing apples and oranges here. Monthly data for interventions can easily be produced on a monthly basis.

"Unless the PC group agrees to customize the output reports..." The PC Group has always agreed to provide reports required by the field offices, according to a schedule that needs to be coordinated with the Health Unit. We have been waiting for the Mid-Term Evaluation report to clarify these needs and allow us to prioritize the needs. In short, the PC Group is more than ready to enhance ProMIS, for the benefit of all field offices, not just one.

"PMIS is much better equipped to serve the user's needs..." This rather subjective statement depends on how you define "serve". While the Revelation List command is a powerful tool, it is not available to general users within the PMIS system; i.e. it needs a Revelation programmer to function. Also, the purpose behind ProMIS was never to duplicate the wealth of reports available in PMIS, but to make the data more accessible to the individuals that need it.

2.5 Procedure for Quality Assurance:

"ProMIS did not allow vaccination for a child over 5 years of age...The data entry had to wait until that condition was removed by the PC Group." This is not correct. The age that ProMIS disallows vaccinations is completely user controllable through the health parameters section. This age can be changed in seconds by anyone, not just the PC Group staff, so that the vaccination dates for older children can be recorded. No mention of this facility was made in the report.

"The software also controls the period between two vaccine doses a child can receive." ProMIS does not place any such restriction. The MTE report does not indicate that this is a condition only of PMIS.

2.6 Manual and Computerized Instruments:

The first part of this section lists all of the variables desired and a comparison of the manual, ProMIS and PMIS systems. Some of these need explanation.

"*Date of Enrollment*": ProMIS, by design, does not record a specific date of enrollment. Each village has a date of enrollment assigned to it. All individuals resident in that village at the beginning of the program have the same date of enrollment. All individuals who enter the village after the initial enrollment do so through a virtual event of some kind, either through migration or birth. This vital event, then, is their effective date of enrollment. Thus, having a date of enrollment is not only superfluous, but dangerous as well, since there is the possibility that the date of enrollment and the other dates will not match, if entered incorrectly.

"*Socio-Economic Indicators*": The decision not to include these data items was a conscious one at the time that ProMIS was designed. The reasoning was quite simple - that although this data was being collected in some countries, it was not currently being used for any reporting purposes. In the interest of trimming the system to a manageable size, we (the Health Unit and MIS) decided to include only data items that were essential to the system and could easily be updated. These indicators, while nice to have, did not fall into this category. This situation might have changed in the past several years and, if deemed appropriate, data of this sort can easily be added to the system. In fact, during my last trip to Jakarta, the local computer staff were busy doing just that. They had constructed a system completely outside of ProMIS to collect and maintain this data. What was remarkable about this initiative was that the external system was using the ProMIS ID codes for validation.

"*Pregnancy Data*": Contrary to the table, ProMIS does provide a place to record pregnancy outcome and number of prenatal visits.

The second half of this section makes some general statements.

"Therefore, what ProMIS really needs is a facility to add new variables easily at the field office level." I am not yet convinced that field offices require a quick and easy way to add variables. I have seen many systems crumble under the weight of data that is collected, but never used - and this includes places where PMIS was installed. This is the bane of any system. I agree, however, that a system needs to evolve and if a field office sees that additional data would be beneficial, then by all means it should be added to a system. However, additions to any system are not cost-free. Every time something is added, there is a burden placed on the data collection staff, the data management staff and the systems development staff. In other words, additional data must be collected, must be put to use and the addition must be added to the computer system. All of this requires planning and coordination. Anyone who adds data to a system like ProMIS without thinking through the implications is courting system disaster.

What ProMIS really needs, then, is a mechanism whereby additions could be recommended by field staff who are in a position to justify the cost of adding to the burden and who could demonstrate a bona-fide need. Perhaps the need could be fulfilled with survey data, which need not be placed into the ProMIS files but, working in conjunction with them, could accomplish the same results.

"PMIS has such a facility. New variables can be added on-line, and in about 10 minutes." I believe that this statement is somewhat misleading. My experience with PMIS and the

Revelation software is that some variables would take considerably more than 10 minutes to add and would require considerable reprogramming. Be careful of sweeping statements like these.

2.7 Standard Reports:

"It was a bit surprising that ProMIS was not addressing all of SC's 10 health behavior goals, nor was it meeting all of USAID's reporting requirements." I will certainly not dispute the statement. I'm not sure that ProMIS was designed to address <u>everything</u>. What I want to know is why isn't the surprise also directed at PMIS, which has been around much longer and yet doesn't produce all the reports required by SC or USAID.

"Age Distribution of Children." ProMIS produces this report. In fact, the age distributions are more flexible in ProMIS than PMIS.

"Even to obtain cross tabulations, which is not possible in ProMIS, data files have to be exported ..." It should be noted that cross-tabulations are not, to my knowledge, available in PMIS either.

"Though ProMIS files are compatible with other softwares [SIC], *the software provides no export facility, although PMIS does."* ProMIS does not currently provide the facility precisely <u>because</u> the data files are compatible with other software packages.

2.8 Implementation Problems:

"The 'save' command in ProMIS did not work." I have been unable to duplicate this problem nor has it been reported by other field offices or from Mali since the team was there. I have two theories, however. First, the individuals using the software were not using it properly. Second, this is the result of serious electrical problems the field office was experiencing. I believe this to be the case. Although ProMIS takes great pains to protect the data in the files, electrical disturbances at the wrong time can wreak havoc. There is nothing in ProMIS that would cause data to be "saved" by exiting the program - no saving takes place during the exit process - so I can't explain this behavior. However, the important point is that this problem does not (to my knowledge) exist now nor did it during my visit in March/April of '92.

"While entering immunization data the program suddenly stopped." This problem was not experienced by the evaluation team, merely reported to them, and yet it is noted in a section on implementation problems experienced by the team. I can assure the team that there <u>were</u> many more problems than this during the testing phase of ProMIS but it is not fair to judge the software on past problems. This should be removed from the report.

"MFO wanted dBase and SPSS software to analyze the data beyond the standard tables provided in ProMIS, but was unsure of Westport's response". Exactly what is the purpose of this statement? Why didn't the field office request dBase and SPSS and find out? I suggest that this statement be changed to read: "MFO would like dBase and SPSS to analyze the data beyond the standard tables provided in ProMIS."

"According to PC Group, the software was working because it was producing a set of tables defined by the HQ." This is exactly right. The PC Group designed and constructed a system according to very strict and well defined specifications, as is required when developing a software system. The measure of success of a system is by comparison to the original specifications, not the users expectations. If the system does not meet the users expectations, then I suggest the evaluation team investigate why the Health Unit did not ensure that the field offices needs were met. The PC Group must work under the assumption that the Health Unit has the best interests of the field offices at heart.

2.9 Limitations of ProMIS/PMIS:

"ProMIS has three rather annoying limitations, one of which it shares with PMIS." The report does not indicate which of the three limitations ProMIS shares with PMIS. Furthermore, the title of the section indicates that this is a section on limitations of ProMIS and PMIS, yet the description seems to focus only on ProMIS. Also, why is there not a section of strengths of ProMIS and PMIS?

"ProMIS is set up to use only one data entry terminal." This is true and the PC Group has offered to remedy this situation with the development of a network-able version of ProMIS. This has been discussed with the Health Unit for at least the past year with no progress. It remains the highest priority of the PC Group, however future development of the package depends on the cooperation of the Health Unit.

"To get a demographic report for a village of 3000 population takes about 4 minutes." The time it takes for a computer system to produce output depends on a variety of factors, chiefly the speed of the hardware and the efficiency of the software. The figure of 4 minutes per 3000 individuals is roughly consistent with my findings using hardware that is currently available in the Mali. In fact, a report I generated in Westport using equipment slightly slower than Mali's turned out a demographic report of 3,800 individuals in just under 4 minutes. If Mali were to purchase faster computer equipment then the report might be produced quicker. I find it curious that no comparison figures were reported for PMIS. I recommend that this section be removed from the report or times for PMIS be included as comparison.

"Then if one wanted report by subdistricts, there are two options: either manually add the village data...or run the program again..." This statement shows a complete lack of understanding of the ProMIS report facility. When defining a report, the user can specify if sub-district totals are required. The user merely has to indicate this on the report specification form. If the user required a report of the entire population, including subtotals of all the geographic levels, they simply indicate as such and wait for the report. After 2.5 hours, all the data is made available. There is no need to rerun the report. This text should be removed from this section of the report.

"Another limitation of ProMIS is its inability to respond to on-line queries." ProMIS does not now have a facility of this sort, however a myriad of products that can use dBase files can provide this facility. While PMIS does have this capability, it is not readily available to any user, just one familiar enough with Revelation to take advantage of the capability. To my knowledge, no third-party products are available to enhance this capability of PMIS.

General Comments:

ProMIS is simply a computer software package developed jointly by the Health Unit and the PC Group based upon the specifications dictated by the Health Unit. During the specification phase, it was the responsibility of the Health Unit to see that the system satisfied the needs of the field offices. In any case, it was the PC Group that initiated feedback from field offices regarding reports. This was done in the form of a field office feedback form sent to about 15 field offices detailing the reports ProMIS would provide and requesting their input.

After installation of the system, it has been the responsibility of the Health Unit to see that the system is used properly and is usefully. Has this been done? Did the Health Unit institute a method of responding to field offices needs?

It's not clear to me that local system development will solve any of the problems faced by the field offices. As we have seen in many field offices around the world, systems are developed without proper specifications or management. I recommend that for population-based data, ProMIS be used and further developed. As ProMIS is an open system, computer-based field staff are free to create their own reports. In fact, it's possible to develop systems in the field that access the ProMIS data but store their own data. All of this flexibility was designed into ProMIS from the start.

CENTRALLY FUNDED AID CHILD SURVIVAL GRANTS
Update for FY93

During FY93 Save the Children was the recipient of AID three year centrally funded Child Survival 9 grants for its Cameroon, Honduras and Malawi field offices. A brief description of all AID centrally funded grants received by the health unit can be found on the next page.

The following country projects have been funded through central AID Child Survival grants since 1985:

Year Funded	*Country*	*Impact Areas*	*Est. Population*
1985	Zimbabwe Mutema, Muusha, Mupedzanhamo	3	37,000
	Bangladesh Ghior, Mirzapur, Rangunia, Nasirnagar	4	51,905
	Indonesia Jakarta (Duri Utara)	1	18,304
	Bolivia (Inquisivi, Licoma, Circuata)	1	11,873
	Ecuador Quito, Portoviejo	2	37,700
1986	Malawi Mbalachanda	1	40,000
	Cameroon Doukoula, Ntui, Yokadouma	3	60,000
	Sudan UmRuwaba (471,000), Showak (46,800)	2	517,800
1987	Honduras Esperanza, Pespire	2	26,689
	Bolivia (Quime, Ichoca)	1	10,655
	Nepal Gorkha	1	109,193
1988	Bangladesh Ghior, Mirzapur, Rangunia,Nasirnagar	4	75,132
	Mali Kolondieba	1	116,000
	Zimbabwe Mutema, Muusha, Mupedzanhamo	3	51,235

1989	Bolivia Inquisivi,Licoma,Circuata	1	16,115
	Burkina Faso Dori	1	87,445
	Indonesia Jakarta (Duri Utara,Duri Selatan)	1	62,000
	Malawi Mbalachanda, Mkhota	2	124,000
	Sudan UmRuwaba, Showak	2	500,000
1991	Nepal Siraha	1	103,542
1992	Bangladesh Nasirnagar, Rangunia	2	150,000
	Burkina Faso Sapone & Ipelce Dept.	1	25,000
	Mali Kolondieba & Bougouni Districts	1	137,900
	Nepal Nuwakot, Central District	1	48,235
1993	Cameroon Mayo Danay and Mayo Kani Divisons Far North Province	1	690,473
	Honduras Tegucigalpa (5 barrios) La Esperanza, Intibuca Dept. (20 villages) San Lorenzo, Valle Dept. (20 villages)	4	43,024
	Malawi Chilipa & Phililongwe, Mangochi Dist.	1	40,000

Ongoing country projects funded with other AID central health funds include:

Vitamin A	1988	Haiti
MotherCare (JSI)	1989	Bangladesh, Bolivia
AIDS (AIDSCAP)	1993	Haiti

The Vitamin A Haiti project focussed on the commune of Maissade reaching approximately 40,000 persons.

The MotherCare project in Bangladesh is located in Nasirnagar reaching 10,000 women; The MotherCare project in Bolivia is located in Inquisivi, Licoma and Circuata reaching a total population of 13,084, which includes 2,634 women.

The AIDS project in Haiti works with partner institutions to reach approximately 500,000 individuals in the Central Plateau with HIV/AIDS prevention projects.

CENTRALLY FUNDED AID GRANTS SUPPORTED BY THE HEALTH UNIT IN FY93

1. Child Survival Grants

. Child Survival I (9/85-8/88, extended to 8/89)
$2,904,471
Grant No. PDC 0502-A-00-5095-00

A three year grant was awarded to SC to demonstrate and document the methods which protect the life and health of children. Specifically, SC sought to a) conduct "child protective" training for families and communities in ten categories of behavior to protect their children from illness and death, and b) to support families in the practice of these behaviors by assisting communities to organize, implement and monitor primary health care. Country projects in Bangladesh and Zimbabwe ended 8/31/88, while projects in Bolivia, Ecuador, and Jakarta were extended and completed in 8/31/89.

. Child Survival II (8/86 - 7/89, extended to 9/30/91)
$1,270,000
Grant No. PDC-0524-A-60-6147-02

As with CSI, the objective of this grant was to train families in three countries of sub-Saharan Africa in practices which will protect child health, and to support child protective behavior by assisting communities to organize, implement and monitor primary health care. Country projects in Cameroon and Malawi were completed 7/31/89. The Sudan project was extended and completed by 2/28/90. An Inter-PVO workshop on Nutrition was conducted in Bangladesh in February, 1990, and follow-up meetings to the workshop were conducted in August 1991.

. Child Survival III (8/87 - 7/91, extended to 1/93)
$1,850,000
Grant No. OTR-0535-A-00-7215-00

The goal of this program was to enhance SC's organizational commitment to Child Survival, and to improve the health conditions among the most vulnerable population groups by reducing mortality and morbidity of women of childbearing age and children under age five through an integrated set of child survival interventions. Program activities were shifted from the Yucumo Impact Area to the Ichoca Impact Area in Bolivia in 1/90 and this project had been extended to 1/31/93. The Nepal and Honduras projects underwent final evaluations in July of 1992; Bolivia underwent a final evaluation in January 1993.

. Child Survival IV (9/88 - 8/92)
$2,742,697
Grant No. PDC-0502-A-00-5095-00

CSIV's (an extension of CSI) major objective is to initiate and enhance previously established program activities in Bangladesh and Zimbabwe and establish a new program in Mali, helping to protect the health and survival of children through family and community training. Zimbabwe's project was completed in August 1991, Mali's program underwent a final evaluation in June 1992 and Bangladesh received a one year no-cost extension through 8/93 to focus on sustainability in the impact areas of Ghior and Mirzapur; a final evaluation was conducted in August 1993. The overall project

was extended for an additional one year to 8/31/94 in order to support an Asia PVO Workshop in Bangladesh in November 1993, and to extend the Bangladesh final reporting date due to floods in Bangladesh. Funds were used in FY93 to partially support an Asia Regional Health Workshop entitled "New Directions" in Nepal, May 2 - 6, 1993.

. Child Survival V (9/89 - 8/94) $4,030,001
Grant No. OTR-0500-A-00-9149-0

Child Survival projects were expanded in Sudan, Indonesia, Malawi and Bolivia and initiated in Burkina Faso. The Sudan project received a 123 E Waiver to begin spending funds from 12/19/89. The home office also received funds to further develop our computerized health information system and to document our initiatives and lessons learned. Sudan and Indonesia projects underwent a final evaluation in July of 1992, the Burkina Faso Project a midterm evaluation in May of 1992 and the Headquarters project a midterm evaluation in July/August 1992 and another midterm evaluation sponsored by AID and JHU in January 1993. Malawi received a one year no-cost extension through 8/93; a final evaluation was conducted in August. The Bolivia project received a no-cost extension through March 1994.

. Child Survival VII (10/91-9/94) $666,350
Grant No. PDC-0500-G-00-1077-00

The primary goal of this project is to reduce infant and child mortality in Ilaka 4 and 5 of Siraha District in Nepal through strengthening the Ministry of Health system and mobilization of the community. The project emphasizes the role of the female Community Health Volunteers and mothers groups in training families. Key interventions include: Diarrheal Disease Management, Immunization, Nutrition, Maternal Health, Literacy Training, ARI and Health Education.

. Child Survival VIII (10/92-9/95) $2,997,805
Grant No. FAO-0500-A-00-2034

Child Survival projects were expanded in Mali and Bangladesh; will be strengthened in the Sapone area of Burkina Faso building on lessons learned from our CS5 project in the Dori area; and a new impact area in the Central Region of Nepal was opened. Building on existing strengths, this grant cycle will concentrate on empowerment of families, sustainability of CS activities through integration with a broad range of nonformal education activities, local institution capacity building, and maternal and adolescent health to reduce infant and child mortality.

. Child Survival IX (10/93-9/96) $2,214,970
Grant No. FAO-0500-A-00-2034-00

Child Survival projects were expanded in Honduras to include three new areas including periurban and urban sites, scaled up in Cameroon to reach a significant number of beneficiaries, and begun in a new underserved area of Malawi. This grant cycle broadens institutional building efforts with Ministry of Healtns and community partnerships.

2. Other AID Grants

Vitamin A Grant (8/88 - 9/92) $500,000
Grant No. OTR-0284-A-00-8254-00

The goal of this program was to provide Vitamin A capsules as well as nutrition education to a pre-selected target population in Haiti. The grant provided funding for both Haiti project activities and home office support. In FY92, due to civil unrest and limited project activities, Haiti applied for and received a one-year no-cost extension to this grant. A final evaluation was completed in September 1993.

MotherCare Subcontract (4/89 - 9/93) $617,354

SC is subcontracted to John Snow, Inc. for the Maternal and Neonatal Health and Nutrition Project, a USAID contract valued at $13,500,000. Our subcontract funded two field projects; one in Bolivia and the other in Bangladesh that demonstrated a community based approach for the improvement of maternal and neonatal health. Bolivia's project was designed to provide information regarding the characteristics of the population during pregnancy, labor and delivery, and the postpartum period and to identify risk factors and probable causes of maternal and neonatal mortality. Bangladesh's project was designed to test methodologies and service linkages for reaching women at high risk and to develop and test educational materials relating to pregnancy. Both projects were concluded in September 1993.

SAVE THE CHILDREN
Pipeline Analysis

COOPERATIVE AGREEMENT PDC-0502-A-00-5095

CHILD SURVIVAL IV: FIELD OFFICE SUMMARY

21-Oct-93

BUDGET VS. ACTUALS FOR YEAR 5 AND TOTAL EXPENSES TO DATE VS. TOTAL GRANT AWARD *

					YEAR 5: EXPENSES VS. PLANNED BUDGET *				LIFE OF GRANT: CUM EXPENSES VS. TOTAL GRANT *			
	EXPENSES YEAR 1	EXPENSES YEAR 2	EXPENSES YEAR 3	EXPENSES YEAR 4	EXPENSES 07/31/93	PLANNED BUDGET **	BALANCE	% SPENT	CUMULATIVE ACTUALS	TOTAL PLANNED BUDGET	BALANCE	% SPENT
Headquarters	85,390.97	129,629.42	169,622.84	281,946.76	113,996.00	108,034.01	(5,961.99)	105.5%	780,585.99	774,624.00	(5,961.99)	100.8%
Bangladesh	120,950.08	110,035.13	87,217.36	137,028.28	80,165.21	148,269.17	68,103.96	54.1%	535,396.04	603,500.00	68,103.96	88.7%
Zimbabwe	109,484.69	125,401.86	125,738.26	3,040.16	0.00	1,615.03	1,615.03	188.2%	363,664.97	365,280.00	1,615.03	99.6%
Mali	92,288.47	192,031.61	220,566.78	117,538.14	0.00	0.00	0.00		622,425.00	622,425.00	0.00	100.0%
Asia PVO Conference***	12,771.56	37,228.44	0.00	0.00	8,059.00	8,059.00	0.00	0.0%	58,059.00	58,059.00	0.00	100.0%
Bangladesh Conference****	0.00	0.00	0.00	0.00	0.00	54,032.00	54,032.00		0.00	54,032.00	54,032.00	
Subtotal	420,885.75	594,326.46	603,145.24	539,553.34	202,220.21	320,009.21	117,789.00	168.6%	2,360,131.00	2,477,920.00	117,789.00	95.2%
Indirect Costs	33,465.63	93,554.85	74,594.04	69,642.63	26,207.74	1,578.85	(24,628.89)	4411.0%	297,464.89	272,836.00		109.0%
TOTAL AID	454,351.38	687,881.31	677,739.28	609,195.97	228,427.95	321,588.06	93,160.11	189.4%	2,657,595.89	2,750,756.00	117,789.00	96.6%

* Final direct and indirect expenses for year 4; Year 5 expenses through: 07/31/93
** Revised budgets for Mali, Zimbabwe and Bangladesh from DIPs. Also reflects revised Indirect Costs budget per Amendment No. 6.
*** PVO Conference held in Jakarta by PCI.
**** Conference to be held in Bangladesh per Amendment No. 6. ICR used 20.30%

Year 1 = Sept. 1, 1988 – Aug. 31, 1989
Year 2 = Sept. 1, 1989 – Aug. 31, 1990
Year 3 = Sept. 1, 1990 – Aug. 31, 1991
Year 4 = Sept. 1, 1991 – Aug. 31, 1992
Year 5 = Sept. 1, 1992 – Aug. 31, 1993

No-cost extension approved with Amendment #7 dated 6/23/92.

SAVE THE CHILDREN
Pipeline Analysis

COOPERATIVE AGREEMENT OTR-0500-A-9149

CHILD SURVIVAL V: FIELD OFFICE SUMMARY

21-Oct-93

BUDGET VS. ACTUALS FOR YEAR 4 AND TOTAL EXPENSES TO DATE VS. TOTAL GRANT *

	YEAR 4: EXPENSES VS. PLANNED BUDGET *							PLANNED BUDGET YEAR 5	LIFE OF GRANT: CUM TOTAL VS. TOTAL GRANT *			
	EXPENSES YEAR 1	EXPENSES YEAR 2	EXPENSES YEAR 3	EXPENSES 07/31/93	PLANNED BUDGET**	BALANCE	% SPENT		CUMULATIVE ACTUALS	TOTAL PLANNED BUDGET***	BALANCE	% SPENT
HQ Special Projects	52,189.00	152,012.76	77,029.38	105,932.01	234,050.91	128,124.90	45.3%	195,450.95	387,163.15	710,739.00	323,575.85	54.5%
HQ Tech. Assistance	22,831.48	72,637.06	54,132.06	60,568.46	103,000.00	42,431.54	58.8%	69,261.40	210,169.06	321,862.00	111,692.94	65.3%
Bolivia	80,513.07	112,056.93	99,220.03	90,935.58	107,059.68	16,124.10	84.9%	44,569.29	382,725.61	443,419.00	60,693.39	86.3%
Burkina Faso	117,943.80	168,010.75	144,912.06	150,903.00	231,628.03	80,724.65	65.1%	147,453.74	601,771.41	829,950.00	228,178.59	72.5%
Indonesia	57,752.18	86,437.14	117,926.18	840.44	39,573.50	38,733.06	2.1%	0.00	262,955.94	301,689.00	38,733.06	87.2%
Malawi	100,746.66	153,724.95	108,044.07	112,037.08	131,791.32	18,954.24	85.6%	0.00	475,352.76	494,307.00	18,954.24	96.2%
Sudan	123,609.31	255,560.66	37,174.14	49,827.53	80,691.89	30,864.36	61.8%	0.00	466,251.64	497,116.00	30,864.36	93.8%
Mali Workshop	0.00	0.00	33,400.47	1,992.39	8,794.53	6,802.14	0.0%	0.00	35,392.86	42,195.00	6,802.14	83.9%
Sub-Total:	555,685.50	1,020,440.25	671,839.21	573,037.47	936,596.66	362,759.19	61.3%	456,735.38	2,821,782.43	3,641,277.00	819,494.57	77.5%
Indirect Costs-##	70,579.47	123,704.36	93,374.78	74,041.98	121,731.39	47,689.41	60.8%	29,333.00	361,700.59	438,723.00	77,022.41	82.4%
TOTAL	626,244.97	1,144,144.61	765,213.99	647,079.45	1,058,328.05	410,448.60	61.2%	486,068.38	3,183,483.02	4,080,000.00	896,516.98	78.0%

* Final expenses for Year 3; Year 4 expenses through: 07/31/93
** Revised Field Office budgets from DIPs.
*** 18.5% of ICR applies only to Mali Workshop.

Year 1 = Sept. 1, 1989 – Aug. 31, 1990
Year 2 = Sept. 1, 1990 – Aug. 31, 1991
Year 3 = Sept. 1, 1991 – Aug. 31, 1992
Year 4 = Sept. 1, 1992 – Aug. 31, 1993
Year 5 = Sept. 1, 1993 – Aug. 31, 1994

LINE ITEM FLEXIBILITY: No flexibility between Procurement, Evaluation and Other.
100% flexibility within each group.

SAVE THE CHILDREN
Pipeline Analysis

COOPERATIVE AGREEMENT PDC-0500-G-00-1077 CHILD SURVIVAL VII SUMMARY 21-Oct-93

NON 0750 HQ

BUDGET VS. ACTUALS FOR YEAR 2 AND TOTAL EXPENSES TO DATE VS. TOTAL GRANT

	EXPENSES YEAR 1	EXPENSES 07/31/93	PLANNED BUDGET YEAR 2	BALANCE	% SPENT	PLANNED BUDGET YEAR 3	LIFE OF GRANT CUMULATIVE EXPENSES VS. TOTAL GRANT: CUMULATIVE ACTUALS	TOTAL GRANT	BALANCE	% SPENT
Headquarters										
Salaries	8,540.79	7,875.72	16,753.21	8,877.49	47.0%	13,793.00	16,416.51	39,087.00	22,670.49	42.0%
Fringe	1,281.12	1,907.92	5,294.88	3,386.96	36.0%	3,586.00	3,109.04	10,182.00	6,972.96	31.4%
Travel	996.27	1,965.06	15,488.73	13,523.65	12.7%	9,494.00	2,961.35	25,979.00	23,017.65	11.4%
Other Direct Costs	50.55	241.45	3,079.45	2,838.00	7.8%	1,810.00	292.00	4,940.00	4,648.00	5.9%
Subtotal Headquarters:	10,868.73	11,990.17	40,616.27	28,626.10	29.5%	28,683.00	22,858.90	80,188.00	57,309.10	28.5%
Nepal	88,567.31	69,754.65	136,288.69	66,534.04	51.2%	116,916.00	158,321.96	341,772.00	183,450.04	46.3%
Total Direct Costs:	99,436.04	81,744.82	176,904.96	95,160.14	46.2%	145,599.00	181,180.86	421,940.00	240,759.14	42.9%
Indirect Costs	18,395.66	15,081.01	34,111.34	19,030.33	44.2%	25,553.00	33,476.67	78,060.00	44,583.33	42.9%
TOTAL COSTS	117,831.70	96,825.83	211,016.30	114,190.47	45.9%	171,152.00	214,657.53	500,000.00	285,342.47	42.9%

* Final Field Office, Home Office and Overhead through: 07/31/93
** Budget per DIP
*** Supplies are individually under $500 per item.

Year 1 = August 27, 1991 – September 30, 1992.

Year 2 = October 1, 1992 – September 30, 1993.

Year 3 = October 1, 1993 – September 29, 1994.

SAVE THE CHILDREN
Pipeline Analysis

COOPERATIVE AGREEMENT FAO-0500-A-00-2034

21-Oct-93

CHILD SURVIVAL VIII: SUMMARY

	YEAR 1: EXPENSES VS. PLANNED BUDGET						LOG: CUMULATIVE EXPENSES VS.TOTAL GRANT			
	EXPENSES 07/31/93	PLANNED BUDGET	BALANCE	% SPENT	BUDGET YEAR 2	BUDGET YEAR 3	CUMULATIVE ACTUAL	TOTAL BUDGET	BALANCE	% SPENT
Bangladesh	66,164.27	158,460.00	92,295.73	41.8%	231,600.00	246,850.00	66,164.27	635,910.00	569,745.73	10.4%
Burkina Faso	112,275.10	183,392.00	71,116.90	61.2%	186,344.00	182,662.00	112,275.10	552,398.00	440,122.90	20.3%
Home Office	57,882.10	118,460.00	60,577.90	48.9%	124,490.00	130,840.00	57,882.10	373,790.00	315,907.90	15.5%
Mali	194,504.94	194,973.00	468.06	99.8%	204,811.00	187,373.00	194,504.94	587,157.00	392,652.06	33.1%
Nepal	62,998.89	113,190.00	50,191.11	55.7%	120,485.00	110,510.00	62,998.89	342,666.00	279,667.11	18.4%
Total Direct	493,825.30	768,475.00	274,649.70	64.3%	867,730.00	858,235.00	493,825.30	2,491,941.00	1,998,115.70	19.8%
Indirect	100,827.92	158,432.00	57,604.08	63.6%	175,051.00	172,381.00	100,827.92	505,864.00	405,036.08	19.9%
TOTAL	594,653.22	926,907.00	332,253.78	64.2%	1,042,781.00	1,030,616.00	594,653.22	2,997,805.00	2,403,151.78	19.8%

Year 1 - Sept 30,1992 - Sept. 30, 1993
Year 2 - Oct 1, 1993 - Sept. 30, 1994
Year 3 - Oct 1, 1994 - Sept 30, 1995

Budgets revised to Amendment 3
*Supplies are individually under $500 per item.

SAVE THE CHILDREN
Pipeline Analysis

COOPERATIVE AGREEMENT OTR-0284-A-00-8254

HAITI VITAMIN A

21-Oct-93

BUDGET VS. ACTUALS FOR YEAR 5 AND TOTAL EXPENSES TO DATE VS. TOTAL GRANT AWARD

	EXPENSES YEAR 1	EXPENSES YEAR 2	EXPENSES YEAR 3	EXPENSES YEAR 4	YEAR 5: EXPENSES VS. PLANNED BUDGET **				LIFE OF GRANT: CUM EXPENSES VS. TOTAL GRANT *			
					EXPENSES 07/31/93	PLANNED BUDGET	BALANCE	% EXPENDED	CUMULATIVE ACTUALS	TOTAL PLANNED BUDGET	BALANCE	% SPENT
0750 HQ												
Personnel	2,551.68	44,749.93	37,122.17	13,408.54	55,963.56	120,777.68	64,794.12	46.4%	153,815.88	218,610.00	64,794.12	70.4%
Other					68.05	0.00	(68.05)		68.05	0.00	(68.05)	
7250 HAITI												
Personnel	19,767.50	44,077.70	29,403.67	38,388.97	24,064.97	27,509.66	3,444.69	87.5%	155,702.81	159,147.50	3,444.69	97.8%
Travel	1,062.00	2,649.70	1,501.79	15,601.90	1,733.96	1,256.56	(477.38)	138.0%	22,549.35	22,071.97	(477.38)	102.2%
Equipment	21,751.25	1,558.78	(563.78)	122.67	0.00	(0.00)			22,868.92	22,868.92	0.00	100.0%
Supplies	13.60	2.41	558.65	33.07	0.00	0.00	0.00	0.0%	607.73	607.73	0.00	100.0%
Other Direct Costs	4,306.99	19,214.03	12,376.20	3,238.66	64.76	(0.00)	(64.76)		39,200.64	39,135.88	(64.76)	100.2%
HNUTN					22,395.31	0.00	(22,395.31)		22,395.31	0.00	(22,395.31)	
Subtotal Haiti	46,901.34	67,502.62	43,276.53	57,385.27	48,259.00	28,766.24	(19,492.76)	167.8%	263,324.76	243,832.00	(19,492.76)	108.0%
Total Direct Costs	49,453.02	112,252.55	80,398.70	70,793.81	104,310.61	149,543.92	45,233.31	69.8%	417,206.69	462,442.00	45,233.31	90.2%
Indirect Costs	2,343.57	15,592.49	19,486.41	12,056.50	17,795.39	24,326.03	6,530.64	73.2%	67,274.36	73,805.00	6,530.64	91.2%
Total	51,796.59	127,845.04	99,885.11	82,850.31	122,106.00	173,869.95	51,763.95	70.2%	484,483.05	536,247.00	51,763.95	90.3%

* Final expenses for year 4; Year 5 through: 07/31/93

** Budget reflects approved increase in indirect costs (to 17.06%) per Amendment No. 2.

*** Year 5 no-cost extension approved by AID on 6/23/92, with Amendment No.

Balances from Year 4 included in Year 5

Year 1 = September 1, 1988 – August 31, 1989
Year 2 = September 1, 1989 – August 31, 1990
Year 3 = September 1, 1990 – August 31, 1991
Year 4 = September 1, 1991 – August 31, 1992
Year 5 = September 1, 1992 – September 30, 1993

No-cost extension approved 6/23/92

APPENDIX 9

LESSONS LEARNED FROM FIELD PROGRAMS

1. BANGLADESH CS4

Continuation of the project interventions after the withdrawal of the CS funding from two of the four project areas (i.e. Mirzapur & Ghior) were major concerns of the project during the past year.

The community health workers who were trained and working under the CS program were taken as village health volunteers under the Government of Bangladesh's health extension and promotion program. The PHC center in Mirzapur has also been taken up by the MOH, through which child survival interventions (i.e., EPI, VAC distribution, primary curative care etc.) will be continued.

The lessons learned from the study conducted by URC in August 1993 titled "Participation in Women's Savings Groups and Implications for Health Care Behavior in the Save the Children (USA) Catchment Areas" shows that WSG participation accentuated the effectiveness of child survival activities. The study findings indicate that "Most of the participants, having received training in health and family planning, might be able to sustain some of the health care services currently provided by SC". Also, a higher proportion of participants compared to the other two groups have contacts with the health and family planning service providers. The proportion helping others in establishing contacts with the health service provides is higher among the participants than the others. Health related topics are widely discussed in the WSG meetings, thereby helping raise health related consciousness among the members. A very high proportion of the members also disseminate knowledge acquired in the group meetings with the non-members, thereby indicating that they help raise health related consciousness in the community.

2. BANGLADESH CS8

The counselling materials developed under the MotherCare project is being field tested (used) under the CS8 project. The major objective of these counselling materials is to raise awareness among the husbands, mother-in-laws and mothers themselves to understand that, though pregnancy is a natural process, mothers need special care during this period and process to avoid unnecessary and avoidable maternal and neonatal mortality and morbidity. The effectiveness of this intervention will be evaluated in Feb., 1994. But, from the observations and discussions with the workers using these materials it seems, that these materials were very effective in repositioning the traditional social cultural attitudes towards maternal care.

3. BOLIVIA CS3

The project developed a two tiered strategy to sustain health activities after the life of the project - the strengthening of the MOH services and the training of mothers in child protective behaviors. While difficulties and delays arose from coordinating activities with the MOH and other local institutions (agrarian unions) at the beginning of the project, the benefits of this approach are beginning to materialize. Working with these institutions also aids the transfer of lessons learned and sets the project up to be a "learning experiment" where positive approaches

and ideas can be replicated elsewhere. The second strategy was useful as demonstrated by increased knowledge and practices of mothers in key health preventive areas.

Health objectives were achieved, in part, because of the information system established by the project. The system was used for effective monitoring, supervision and quarterly planning of activities.

The K & P survey conducted in the CS 3 final evaluation was a relevant activity that will serve as a useful baseline survey for the remaining years of the project. The tool was useful for assisting the staff to focus on and plan activities based on the most relevant and important health areas.

Sustainability in the long term depends on a high level of community involvement, participation and responsibility. Projects which devote time initially for community organization and inclusion of community groups in the project, including time for the community to understand their health problems and discuss their possible solutions, have a greater chance of changing long-term health behaviors than projects which strive to reach high objectives within a tight time frame.

A project that sets and monitors sustainability indicators along with health indicators will be in a better position to periodically evaluate its sustainability strategy and re-plan activities in an efficient and timely manner.

4. BOLIVIA CS5

Community participation is key to program sustainability: the implementation of integrated development fairs, with field supervisors remaining in the communities for 2-3 days seems to provide a greater chance for program sustainability, since it involves the community to a high degree.

This strategy included the following activities: joint planning of the fair with community members; interventions in various sectors (including Primary Health Care); training; monitoring of progress (or lack thereof) since the previous integrated fair; collection and analysis of information by SC/Bolivia personnel, community volunteers, and local authorities; and the feedback of information to the community.

5. BURKINA CS5

The project adopted a new approach subsequent to the mid-term evaluation. This new approach is characterized by monthly village meetings in which the HOs cover one theme at a time. This allowed for an improved coverage and better participation than the previous approach of 10-day long workshops on a variety of themes. This improvement was evidenced in the results of the KAP survey carried out in April and May of this year.

The project also reached out to all women of child bearing age (13-49 years), rather than just to women with children. This reflects a more realistic understanding of the practices of the area, in which girls often marry at young ages. The project staff promoted the active participation of older women, from 40 to 49 years of age, who often act as decision makers in the family, but this age groups was very reluctant to participate, perhaps due to traditional beliefs about such women's roles.

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Village Health Volunteers in many villages became active proponents of health activities in their villages, and this has served to strengthen the potential sustainability of the project's benefits.

Lessons Learned:

Over the course of the four years of this project, it has become clear that only by integrating health activities into activities which more directly address the felt needs of the communities -- needs such as food security, water availability, and increased agricultural production -- will full community participation be achieved. This realization serves as an important lesson for the future of village-based health activities in the area.

6. HAITI VITAMIN A:

The importance of a defined and good health information system was underscored. Equity was ensured by identifying all members of a given population requiring services. No-show and non-participants were known by name by community health workers and the reasons for their lack of participation detected. Valid denominators can be used for service statistics. Individual community health worker's performance on key indicators (Vitamin A capsule delivery, weighing, etc.) was monitored and poor performers received extra supervision to resolve problems.

This year, post-nutrition education and demonstration workshop evaluations were held. Malnourished children participating in workshops were weighed one month afterwards and the mother questioned on knowledge and skills taught during the workshop. This allowed evaluation of the workshop's effectiveness, follow-up of the children, identification of barriers which may prevent mothers from putting the lesson into practice as well as correction of messages by the community health worker conducting the evaluation.

Foods rich in Vitamin A (green leaves, sweet potato leaves, etc.) are traditionally consumed in Maissade and most often by the poorest families. Well-off families in Maissade would not serve a visitor soup made with traditional green leaves. A Haitian proverb that "beans are the meat of the poor" could be modified for Maissade to say "vegetables, fruit and green leaves are the beans of the poor".

However, an intensive education campaign and improvement of traditional home gardens undertaken by both health educators and agriculture extension agents valorized these vegetables and green leaves and had an impact on stereotypes regarding the value of traditional vegetables and green leaves.

Evaluators also thought that agriculture extension services to intensify traditional home gardens automatically benefitted the poorest of the poor in Maissade. This is because this group owns very little land and has the most interest in intensifying the little garden space they have.

7. MALAWI CS5

SC/Malawi has worked in collaboration with the Ministry of Health on three major strategies whose adoption has greatly enhanced the chances of sustainability of selected child survival interventions: the Employment of Health Surveillance Assistants (HSAs) by the MOH, the Drug Revolving Fund (DRF) and the Health Information System (HIS).

EMPLOYMENT OF HSAs: The MOH has already absorbed into the Government Health/PHC services 25 out of 35 Community Health Supervisors (CHSs). The Village Health Promoters and selected community based activities will also be absorbed by the MOH. This strategy will provide continuity to some CS interventions including the supervision of the DRF.

Women as Health Surveillance Assistants: Experience with female CHSs/HSAs in the SC/Malawi CS 5 project has been very effective. Although the responsibilities of the HSAs requires frequent travel by bicycle and days away from their families, drop-out rates were very low. Choosing women residents in the area increases the chances of stability, avoids the need to furnish accommodations and leads to an open relationship between HSAs and women in the target population.

THE DRUG REVOLVING FUND: SC/Malawi has shown that the DRF can be operated at village level to provide access to treatment for common diseases. DRF allowed VHPs to see that they are making an impact on the lives of their community members, and motivated them to continue their activities. DRFs gave the villagers and Village Health Committees (VHCs) a concrete way to take responsibility for their own health. There are 136 DRFs operating in Mbalachanda Impact Area out of the 141 initially started. Some minimum assistance should be provided from local institutions so the DRF will have greater chances for long term sustainability.

In Mbalachanda Impact Area, where the DRF has been operating, a drug package worth 6,000 K has been distributed during the phaseout period to all the communities that contributed to the fund. Each community has named a three member area committee to supervise and coordinate the DRF management, including book-keeping. The District Health Officer (DHO) from Mzimba District Hospital will work with community leaders to provide support in maintaining the re-supply of drugs. Adequate buffer stocks of anti malaria drugs (such as Fansidar), cotrimoxazole, Panadol, Aspirin and eye ointment is currently in place.

THE HEALTH INFORMATION SYSTEM: The project's HIS has demonstrated the ability of CHSs and VHPs to gather community-based health data. This information is important for good management of community activities. SC/Malawi has made progress in providing community feedback on the data collected. There is still work to be done in this area, but the HIS system of under-five rosters and monthly reports appears to be a feasible means of data collection at the village level.

The village data collection forms were modified at a workshop attended by MOH, HQS, SCF/US, regional and District Health Offices and local NGOs. These modified forms are currently being used by the VHPs and government HSAs for village-based data collection. The MOH Community Health Sciences Unit is planning to use this forms nationally on a trial basis.

The project's use of the Lot Quality Assessment (LQA) technique in 1992 for assessing the accuracy of the HIS and population coverage provided useful data to identify needs for further training and supervision of CHSs. The Malawian experience with the LQA was further tested in other SC offices such as Bangladesh, Mali and Haiti. The SC experience with the LQA suggests that this is a rapid, efficient and adaptable assessment method.

INTERSECTORAL COLLABORATION WITH OTHER INSTITUTIONS: Experiences from the CS 5 project have shown that community development assistants from the Ministry of Women and Children Affairs and Community Services can be effectively integrated into the support of village level CS activities, especially if provided training on CS interventions.

NUTRITION/WEANING EDUCATION: VHPs played a significant role in assisting the MOH and other NGOs in food/supplementary feeding activities during the drought months. Some VHPs were quite enthusiastic in educating mothers about nutrition and as lactating mothers themselves they emphasized breast-feeding education. Mrs. Mwale, a VHP at Mphonde in Mkhota I.A. posed for a picture with her twin daughters to be used as a visual aid about advantages of breast-feeding.

8. NEPAL CS7

Lessons Learned: Demonstration is the best method for teaching mothers how to prepare Jeevan Jal (Nepal's ORS). Over 1,500 participants in the female adult literacy program were trained in the preparation and use of Jeevan Jal through demonstration and return demonstration. A sample survey conducted to assess the impact of the training indicated that 75% of the respondents prepared the solution correctly.

Success Stories: The project aims to improve child survival through increasing access to high quality maternal child health services. These services are provided through the government facilities by government health workers and volunteers. SC/US has initiated a program of in-kind incentives and training for the health workers and volunteers, which has resulted in some improvements in work performance.

Demand for health services and participation of community leaders at health post and outreach MCH clinics has been strengthened by giving these community members an orientation to MCH and assigning them specific responsibilities at the clinics. Community members are starting to notify the health post and SC/US when immunization services are not provided at the monthly EPI clinic sites.

Anecdotes: SC/US has encountered resistance from both community members and health post staff regarding the use of inexpensive essential drugs for the treatment of illness. However, at one outreach clinic, a health worker was observed motivating a mother to give her four year old daughter the tablet form of an antibiotic instead of a syrup.

9. NEPAL CS8

Trafficking of girls for the sex industry in India, is socially accepted, nevertheless, it is a sensitive issue. The issue of AIDS/STDs was not discussed freely in the trainings for ex-prostitutes, who were identified and formed as peer counsellors. They were more sensitive and hesitant to freely discuss the AIDS/STDs topic. Initially, discussions were held on diarrhoea, birth spacing and condoms, and immunizations, which ultimately led to the discussion of AIDS/STDs. The approach was successful.

During Vitamin-A camps and MCH clinics, some of the CHVs administered Vitamin-A capsules under the supervision of clinic staff. If they are given training on Vitamin-A administration, they can be of help during Vitamin-A camps.

Tattooing is common among Tamang teenage girls, and they often share the same needles. Besides the involvement of women in the sex industry, tattooing has been found to be another risk behavior in those communities. Messages about tattooing will be included in the IEC strategy.