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REACH
RESOURCES FOR · CHILD HEALTH

PLANNING AND MANAGEMENT VISIT TO KENYA IN SUPPORT OF REACH TECHNICAL ASSISTANCE TO THE KENYA EXPANDED PROGRAMME ON IMMUNIZATION (KEPI)

Nairobi, Kenya

September 30 - October 4, 1991

JSI JOHN SNOW, INCORPORATED, 1616 N. FORT MYER DRIVE, ELEVENTH FLOOR, ARLINGTON, VIRGINIA 22209 USA
TEL: (703) 528-7474 • TELEX: 272896 JSIWUR • FAX: (703) 528-7480

Planning and Management Visit to Kenya in Support of REACH Technical Assistance to the Kenya Expanded Programme on Immunization (KEPI)

Nairobi, Kenya

September 30-October 4, 1991

Rebecca Fields, M.P.H.
Technical Officer

Resources for Child Health Project
1616 North Fort Myer Drive
Arlington, VA 22209

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LIST OF ACRONYMS

A.I.D.	Agency for International Development
CEIS	Computerized EPI Information System
DANIDA	Danish International Development Agency
EPI	Expanded Program on Immunization
KEMRI	Kenya Medical Research Institute
KEPI	Kenya Expanded Programme on Immunization
REACH	Resources for Child Health Project
R&D	A.I.D. Bureau for Research and Development
UNICEF	United Nations Children's Fund
WHO	World Health Organization

I. EXECUTIVE SUMMARY

REACH Technical Officer Rebecca Fields visited Kenya on September 30 through October 4, 1991 to follow up on a project management visit in May 1991; to monitor current activities of Grace Kagondu, the REACH Communications Advisor to the Kenya Expanded Programme on Immunization (KEPI); and to plan upcoming activities funded both centrally and through USAID/Nairobi's buy-in to REACH.

Principal activities during this visit included briefing REACH consultant Melinda Wilson on the activities within her scope of work; carrying out a final edit of the evaluation report on the Child to Child social mobilization program; preparing a five-page briefing document on USAID/Nairobi activities in support of measles control; and working with Grace Kagondu on planning upcoming social mobilization activities.

II. PURPOSE OF VISIT

The scope of work for this brief visit was as follows:

1. Provide orientation to REACH consultant Melinda Wilson on REACH staff and activities in Kenya.

2. Discuss planning for workshop on accelerated control of measles and other EPI diseases with KEPI staff, Department of Pediatrics staff, Melinda Wilson, Josephine Kariuki, and others.

3. Provide review, if timing and input are appropriate, of draft KEPI five-year plan of operation.

4. Discuss with USAID/Nairobi current involvement of REACH in KEPI activities and programming of REACH ongoing technical assistance to KEPI.

In addition, USAID/Nairobi requested that two other activities be undertaken during the visit:

5. Assist in completing the evaluation of the Child to Child social mobilization program in Siaya.

6. Prepare a briefing document for the Mission on measles, describing the magnitude of measles as a public health problem and the Mission's continuing commitment to measles control in Kenya.

III. TRIP ACTIVITIES

Activities consisted of meetings with staff from KEPI (including the newly-appointed KEPI manager, Dr. Francis Muu), USAID, DANIDA, the Department of Pediatrics at University of Nairobi, and UNICEF. Briefing and planning sessions were held with Grace Kagondu, REACH Communications Advisor to KEPI, and Melinda Wilson, REACH consultant in Nairobi.

Access to KEPI staff was limited during this visit because they were attending a series of planning meetings in preparation for the upcoming DANIDA-sponsored appraisal of KEPI. Both the author and REACH Technical Officer David Boyd, in Kenya during this same period to work on the Computerized EPI Information System (CEIS), met with Grace Kagondu and Jane Wanza of KEPI to brainstorm on ideas for the management, monitoring, evaluation, and research sections of KEPI Plan of Operations for 1992-1996.

Time was also spent conducting a final, detailed review and revision of the evaluation report for the Child to Child project in Siaya. At the request of USAID/Nairobi, a five-page briefing document on measles for the Mission.

Some administrative matters were reviewed with REACH/Kenya staff, and a performance evaluation for REACH Administrative Associate Josephine Kariuki was conducted.

IV. FINDINGS/RESULTS

A. Orientation and Briefing of REACH Consultant Melinda Wilson

Several hours were spent with Melinda Wilson to discuss work to date on the workshop for the accelerated control of measles and other EPI target diseases. Background was provided on the objectives of the workshop, the expected outcome, the intended participants and potential speakers, possible locations, the buy-in budget for the workshop, and the workshop agenda. An agenda format was suggested in which there would be three broad sessions: one on increasing immunization coverage, a second on improving surveillance, and a third on measles case management. The first two sessions would not exclude consideration of other EPI target diseases; however, the overall focus of the workshop would remain on measles.

A copy of all correspondence to date on the workshop was given to Dr. Wilson. She was urged to: pursue the discussion points listed above with Dr. Muu of KEPI and Dr. Onyango of the Department of Pediatrics; obtain copies of whatever materials (background papers and provincial or district level statistics on measles) have been assembled so far; form a small organizing committee; and identify dates and location as a first priority. The budget limitations for the workshop were emphasized. She agreed to keep REACH/Washington and USAID/Nairobi informed of all developments in workshop planning.

Discussion was also held with Dr. Wilson on the tetanus toxoid (TT) serological study. Because a principal investigator, Dr. F.A. Okoth of the Kenya Medical Research Institute (KEMRI), has already been designated and issued a contract for services by REACH/Washington, it was emphasized that Dr. Wilson's role would be very limited--only a few days of time. Her tasks would be to get the study going by organizing a meeting between Dr. Muu and Dr. Okoth, primarily to identify sites, and to assist, on a limited basis, in the set up of data entry screens for data analysis. According to Dr. Wilson, DANIDA, which had previously offered to conduct lab analysis of blood samples at no charge, had requested a brief letter proposal to formalize the request. Dr. Wilson planned to prepare this document shortly following this visit.

Finally, the status of the EPI manual for the Department of Pediatrics was reviewed, both with Dr. Wilson and with Dr. Onyango at University of Nairobi. At the time of this visit, Dr. Wilson was doing a detailed review of a near-final draft. Rather than proceeding with the training of Josephine Kariuki to do the desktop publishing in WordPerfect 5.1 as had been planned, Dr. Wilson had contracted for professional services from Lilian Gachara. Ms. Gachara prepared the manual in Ventura, a software with much greater capacity but which requires more sophisticated hardware than REACH/Kenya has and considerable computer background and training to use. During the visit, Dr. Wilson was pursuing funding from UNICEF/Nairobi for publishing 5,000 copies of the manual. It was anticipated that the manual would be ready in time for the beginning of the school year, which had been delayed until mid-October at the earliest.

B. Planning for the Workshop on Accelerated Control of Measles and Other EPI Target Diseases

Discussions on this topic with REACH consultant Melinda Wilson are described in the above section. The workshop was also discussed briefly with Dr. Onyango and Dr. Muu. Both expressed their great interest in the workshop and the desire for it to be held as soon as possible. Dr. Onyango felt that in the interests of holding it sooner rather than later, the workshop could be conducted in Naivasha or Nakuru, rather than waiting until April 1992 when the hotel rates become more affordable in Mombasa.

Dr. Muu expressed his concern and disappointment that the workshop had already been delayed twice. He had already prepared a background paper for it on the topic of measles mortality between six and nine months in a district with high immunization coverage. Dr. Muu felt that the workshop should have been held before the KEPI appraisal and was most anxious for it to proceed as soon as possible. He stressed that close coordination between KEPI and the Department of Pediatrics was essential in planning the meeting, and looked forward to a first planning meeting with Dr. Onyango and Melinda Wilson immediately following the KEPI appraisal.

C. Review of KEPI Plan of Operations for 1992-96

A series of meetings on the KEPI Plan of Operations was being held during this visit; hence, there was limited availability of KEPI staff with whom to actually discuss the document. The author and REACH Technical Officer David Boyd did meet with Grace Kagondu and Jane Wanza for a couple of hours to discuss approaches to the chapters on management, monitoring, evaluation, and research. However, because the document was being amended on a daily basis, there was no complete draft available for review.

D. Discussion of REACH's Continuing Activity in Kenya

The current buy-in to REACH is due to finish on September 30, 1992. During the author's May 1991 visit to Kenya, USAID/Nairobi had advised REACH of its interest in extending through to September 1993. This would pertain particularly to continuing the salary support for the REACH Communications Advisor. Over the past several months, it had been ascertained that no Mission funds would be available, so central funds would be required. During this visit, the nonavailability of Mission funds was again confirmed, as well as the Mission's interest in continuing REACH activities through September 1993. Support from central funds was indicated by the author, with a couple of different mechanisms mentioned as possibilities.

E. Child to Child Evaluation

A report on the evaluation of the Child to Child social mobilization project had been prepared by the REACH/Kenya Communications Advisor and submitted to USAID/Nairobi immediately prior to this visit. At the request of USAID/ Nairobi, the author conducted a final technical and editorial review to complete the document.

Because the Child to Child pilot program in Siaya was not set up initially in a manner to permit detailed evaluation, it ultimately proved impossible to gather as much information as needed to determine conclusively whether or not the program was successful. The types of additional information needed had already been defined in the draft evaluation report. In addition, this author prepared an addendum to the report called "Considerations for the Replication of the Child to Child Social Mobilization Project in Kenya" (Appendix 2) to specify criteria for determining the appropriateness of Child to Child as a means of increasing coverage in a given district.

F. Measles Briefing Document

At the request of the Mission, the author prepared a briefing document for USAID/Nairobi on measles (Appendix 3). The paper describe the importance of measles as a public health problem in Kenya, strategies for control, USAID/Nairobi-supported activities to date in support of measles control, and possibilities for future activities to reduce measles incidence and severity in Kenya. The paper served as an instrument for the Mission to review in light of the Office of Health-funded measles initiative, under development at the time of this visit.

V. FOLLOW UP ACTIONS

1. REACH/Washington will remain in contact with REACH consultant Melinda Wilson regarding her activities with the measles control workshop, the tetanus toxoid serological study, and the Department of Pediatrics EPI manual. The REACH consultant will likewise inform REACH/Washington of local developments, including the decision by DANIDA on funding of laboratory work for the TT serological study.

2. REACH and the Office of Health will continue to define the mechanism for continuing REACH activities in Kenya through September 1993.

3. At the request of the REACH/Kenya Communications Advisor, REACH will explore the possibility of sending a REACH/Washington communications specialist to Kenya to provide short term technical assistance to KEPI.

4. Various administrative matters pertaining to adjustments and benefits for REACH local hires will be resolved at REACH/Washington.

APPENDIX 1

Contact List

Contact List

USAID/Nairobi

Mr. David Oot	Director, Office of Health, Population, Nutrition
Ms. Connie Johnson	Health and Population Development Officer
Ms. Kate Colson	Intern

REACH/Kenya

Ms. Grace Kagondu	Communications Advisor, KEPI
Ms. Josephine Kariuki	Administrative Associate
Mr. George Kibe	Office Assistant

Department of Pediatrics, University of Nairobi

Dr. Francis Onyango	Chairman

Division of Family Health, Ministry of Health

Dr. Oyoo	Director, Division of Family Health
Dr. Francis Muu	National Manager, KEPI
Ms. Jane Wanza	KEPI Data Management Officer
Mrs. Mary Mwangi	KEPI Training Officer
Mr. Harold Kodo	KEPI Health Education Officer
Ms. Emma Kariuki	Data entry/health information systems assistant

DANIDA

Mr. Per Milde	Senior Management Advisor

UNICEF

Dr. Jean-Jacques Frere	Regional Advisor, Eastern and Southern Africa Regional Office

Other

Dr. Melinda Wilson	REACH consultant and JSI Senior Associate for Africa
Ms. Lilian Gachara	Consultant for desktop publishing
Mr. John Wilson	Country representative, Family Planning Logistics Management project

APPENDIX 2

Considerations for Replication of the Child to Child Social Mobilization Project in Kenya

Considerations for Replication of the

Child to Child Social Mobilization Project in Kenya

1. For districts where coverage is low, review CEIS vaccination coverage for the two most recent years. Check coverage for measles and for an early antigen (BCG or OPV-0), plus the BCG-measles drop out rate to ascertain whether problems with low coverage are due more to starting the vaccination schedule (access or cultural resistance) or to completion of it. Look for trends that might indicate reasons for low coverage, e.g., seasonality, or non-functioning health centers.

2. Review immunization data with the DMHT team to break down district-wide data and identify particular divisions or sublocations responsible for low coverage.

3. For those sublocations identified as having lowest coverage, talk with district and local staff to explore the possible reasons. Specifically, ascertain whether access to health services is a problem and whether health facilities are adequately stocked to supply routine vaccination. If either of these are an issue, work with appropriate staff to develop strategies for their resolution. Likewise, review any available data, such as coverage surveys or missed opportunity surveys, to see if other problems can be identified that pertain to the provision of health services (e.g., inefficient vaccination screening, improper understanding of vaccination contraindication policies, lack of child health cards, inadequate staffing, poor treatment of mothers, etc.). The purpose of this review is to identify whether low coverage problems are a matter of supply or of demand.

4. If demand for vaccination appears to be the problem, discuss with local officials whether it is a matter of cultural resistance and lack of acceptance of immunization, or whether it is a lack of awareness of immunization and the vaccination schedule. If low demand is primarily due to the latter, consider use of the Child to Child approach to mobilize mothers to bring their children for vaccination, as described in the October 1991 evaluation report on the Child to Child pilot project in Siaya.

5. For the MOH sublocation catchment area corresponding to the schools division(s), calculate the approximate number of incompletely immunized children aged 0-2 years targeted for the 4-6 week period of the Child to Child campaign (i.e., one twelfth of the year's babies born, plus the number of incompletely vaccinated children 12-23 months old, based on CEIS data from the previous year). Based on this figure and the assumption that each school pupil participating in Child to Child will be given four appointment slips, calculate the approximate number of school pupils needed to reach the target population and decide whether that number represents one or two classes (i.e., Standard 7, or Standard 6 and 7).

6. Coordinate with all necessary district level officials and local school officials to make arrangements for the Child to Child project. A signed agreement should be made between MOH (KEPI, DHMT) and school officials regarding full school participation in the campaign. That is, delivery of educational materials and appointment slips, plus the possibility of winning any awards, should be contingent upon the school returning stamped slips to MOH officials within a designated timeframe; the penalty being forfeiture of prize eligibility or future involvement in Child to Child campaigns. If such signed agreements cannot be secured from at least 75% of school head-teachers in the selected division, then other social mobilization methods than Child to Child should be pursued (e.g., boy scouts, girl guides, women's groups).

7. Should point #6 above be satisfied, carry out the Child to Child workshop approximately as described in the October 1991 evaluation report, with the following modifications:

   - appointment slips should cite all antigens that a child receives at the vaccination session where the slip is stamped;

   - school records should indicate the dates when teachers received training and materials, the number of both teachers and pupils trained per school, and the total population of participating classes (Standards 6 and 7 or home science) at each shool;

   - midway through the competition period, one day should be designated during which health workers (not pupils) carry out exit interviews to ask why women brought their children for vaccination; as well, questions on missed opportunities can be asked.

8. The data collected should be used to ascertain the level of participation of teachers and pupils in the campaign, and an approximate percentage of vaccinations given as a result of the campaign, by antigen. Based on these data, thresholds can be stipulated to determine whether it is appropriate to replicate the Child to Child approach in future years. For example, criteria might be that 75% of schools participated (as a precondtion), 60% of students returned 2 or more slips, 50% of mothers stated they were motivated to vaccinate their children because of Child to Child, and 50% of total vaccinations were given in conjunction with the campaign. In the absence of clearcut, positive responses in support of the Child to Child approach, other social mobilization efforts should be tried instead of Child to Child campaigns.

APPENDIX 3

Measles Briefing Document

Briefing Document on Measles

Prepared for OHPN/USAID/Nairobi
by REACH Technical Officer Rebecca Fields

October 3, 1991

I. Introduction and Background

Globally, measles deaths were estimated at 1.4 million in 1989, accounting for more deaths than all other EPI target diseases combined. Virtually all children who survive to the age of measles infection will contract measles, and approximately 1-5% will die of the disease or its complications, particularly pneumonia and diarrheal dehydration. The World Bank recently rated measles vaccination as the single most cost-effective primary health care intervention in high mortality environments.

In 1991, A.I.D. signed the declaration of the World Summit for Children, which embraces the World Health Assembly goals for 1995 of a 90% reduction in measles cases and a 95% reduction in measles deaths from pre-immunization levels. Only through acceleration of current EPI strategies and the addition of new strategies, including effective case-management, can these goals for reduced measles morbidity and mortality be met.

II. Measles in Kenya

Nationwide figures describing the morbidity and mortality of measles in Kenya are incomplete and considerably underestimate the magnitude of the problem. The reported number of measles cases at outpatient facilities for the three most recent years (1988-1990) ranged from 70,000 to 87,000 cases, with approximately half of all facilities reporting.

Due to the difficulty of conclusively diagnosing a rash-like illness as measles and the fact that many consultations identified as pneumonia or diarrheal diseases may have measles as an underlying cause, these figures provide a low estimate of measles prevalence. If it is considered that all unimmunized children are at risk of contracting measles, then with nationwide measles coverage of 58% in 1990, up to 475,000 infants under one year old were at high risk of contracting the disease last year.

Nationwide measles mortality figures are unavailable for Kenya, but a number of studies provide evidence of high rates of measles-associated deaths in infants and children. A longitudinal study in Machakos indicated that measles was the third leading cause of death in the post-neonatal period, and first for ages 1-4 years. A 1981 review of the vital registration system in Siaya showed levels of over 20% of measles mortality in children under age 5. A more recent study in western Kenya, conducted immediately after a severe measles outbreak in 1988, investigated all deaths in children under ten and found that measles accounted for 40% of all deaths during the year preceding the survey. Data taken from registers in the early and mid-1980s in Nyeri and Kwale indicated lower levels of mortality: 15-22% of mortality in children between the ages of one and four.

Case fatality rates (CFRs) for measles are high in Africa. Results from

the Machakos studies showed CFRs of 2.4-6.2% in children under five. However, CFRs of approximately 12% in children under five were observed i n community surveys following two measles outbreaks in western Kenya in the late 1980s. CFRs were higher in children in the community than in hospitalized measles cases; this was explained by the fact that most of those children admitted to hospital during their illness actually returned home before death. CFRs were substantially elevated in families where there were multiple cases of measles, and crowding within a household poses a significant risk of death among measles cases.

III. Strategies for Measles Control

A variety of approaches are needed to control measles transmission and reduce mortality. Principal among these are the following:

- **Identifying and targeting areas and groups at highest risk of measles.** Software management tools such as the Computerized EPI Information System (CEIS) and Coverage Survey Analysis Software (COSAS) can be used to analyze data quickly and thoroughly, thus helping to define those areas that may be at high risk of measles outbreaks because of inadequate or improper vaccination. Urban areas constitute a particularly risky situation where high population densities foster the propagation of the measles virus; they therefore deserve special attention.

- **Increasing and sustaining measles vaccination coverage.** Measles coverage traditionally lags behind that for other antigens. High drop out rates, inefficient screening by health facility staff, and erroneous beliefs about the severity of the disease all contribute to the problem. Operational research is needed to understand the obstacles to higher coverage at health facilities, and communications campaigns that promote completion of the EPI series with measles vaccine by 12 months of age are also needed. Alternative immunization strategies, such as early vaccination with high titer, high potency vaccines and the use of two-dose schedules with standard vaccine will also be appropriate for some situations.

- **Improving disease surveillance to document disease reduction.** A variety of creative approaches are needed to identify and respond to acute situations (measles outbreaks) and provide trend analysis information. The CEIS cases and deaths module, now under development by the REACH Project, can be used in conjunction with simple, locally adapted surveillance tools to promote the use of data for immediate decision making. Special surveillance systems in high risk areas, particularly cities, are also of increasing importance.

- **Decreasing measles deaths through appropriate case management.** Attainment of global targets for mortality reduction will require both high levels of immunization and reduction of case fatality rates. The latter can be achieved by promoting early diagnosis and supportive care to prevent onset of complications, and possibly through the administration of vitamin A to measles cases to mitigate the severity of the disease.

IV. USAID/Nairobi's Contributions to Measles Control

USAID/Nairobi's original commitment to the Kenya Expanded Programme on Immunization (KEPI) was in the area of measles control. The Mission has contributed to measles control efforts both directly and through its buy-ins to the Resources for Child Health Project (REACH), a centrally-funded project managed by John Snow, Inc.

A. Contributions to Date

Since 1988, USAID/Nairobi has directly supported measles efforts through the donation of measles vaccine to KEPI. This is anticipated to continue through January 1993.

Through buy-ins to the REACH Project, USAID/Nairobi has supported the placement of a long-term communications advisor at KEPI as well as a variety of activities designed to strengthen KEPI's capacity to control EPI target diseases.

The KEPI Communications Advisor has undertaken a variety of communications and social mobilization activities designed to promote EPI as an entire program, rather than focusing on single disease entities. Radio broadcasts, written and pictorial materials, and community involvement through girl and boy scouts and schoolchildren are some of the methods that have been used to create and maintain demand for EPI. An evaluation of the Child to Child social mobilization program, designed and implemented by the Communications Advisor, has resulted in substantial increases in doses administered of measles vaccine--more so than for other vaccines.

The Communications Advisor will continue her involvement in KEPI for at least another year. Upcoming activities may focus on sustaining demand for EPI during the entire vaccination series, ending with measles, since initial acceptance of EPI in Kenya appears high. While this approach will have greatest impact on measles vaccine coverage, it will attempt to do so without overtly singling out measles vaccination, which could be detrimental to coverage for other EPI antigens. The concept of the fully protected child (by one year of age) will also be promoted, as it supports measles in particular and EPI in general and is appropriate in a setting like Kenya where coverage and access are relatively good. Social mobilization of community groups in urban areas can be undertaken to sensitize the population to recognize the signs of measles and the danger that it poses.

REACH has provided KEPI with ongoing assistance in the area of information system utilization tailored to EPI. The installation by REACH of the computerized EPI Information System (CEIS) has the objective of providing rapid analysis and feedback on vaccination coverage and progress toward annual vaccination targets. Current and upcoming work focuses on increasing the interpretation and use of data generated by KEPI. The key indicators include access to services, completeness of reporting, and completion of the schedule, using measles vaccination as the parameter. Monthly management reports will rank district reports on measles coverage and will measure drop out rates based on measles vaccination. A cases and deaths module for CEIS is presently

under development with input from KEPI, and will provide a tool for ongoing monitoring of measles morbidity and mortality.

A second information system introduced to KEPI by REACH is Coverage Survey Analysis Software (COSAS), designed to expedite the rapid and thorough analysis of EPI 30-cluster survey results. Special capabilities of COSAS with particular relevance to measles control include the analysis of missed opportunities to immunize because of inefficient vaccination screening—a problem of noted importance with measles vaccination; and the generation of a distribution of age at vaccination for each antigen. The latter rapidly permits the identification of those infants who were immunized between nine and twelve months, i.e., as early and effectively as possible. REACH has trained KEPI staff in the use and interpretation of COSAS and has installed COSAS at KEPI. If district level coverage surveys are carried out as planned in 1991-1992, REACH will be able to assist in their full analysis and interpretation using COSAS.

B. Upcoming Activities

In early 1992, REACH will organize and conduct a three-day workshop on strategies for accelerating the control of measles. The workshop, supported by the USAID/Nairobi buy-in to REACH, will bring together key Kenyan physicians and health professionals and international measles experts to analyze the epidemiology of measles in Kenya, present state of the art technical information on measles control, and ultimately, outline a strategy for improving the reduction of measles morbidity and mortality in Kenya. This will be a ground-breaking effort, as no other countries in Africa have undertaken this type of initiative. While the focus of the workshop will be on measles, the approaches discussed, including increasing vaccination coverage and improving disease surveillance, will have relevance to other EPI diseases as well.

One to two months prior to this workshop, REACH will conduct a detailed cost benefit analysis of KEPI. It is often difficult to garner local financial resources for preventive care. This study will compare the costs of EPI and the benefits that it confers with the costs of morbidity and mortality when EPI diseases are not prevented. Given the substantial burden of sickness and death imposed by measles in Kenya, measles will be a key subject of study in this research. Results of the study should be available in time for presentation at the measles workshop in February or March 1992.

C. Additional Possible Areas

In addition to the areas already funded by the buy-in to REACH, there are other technical areas that could be carried out to augment measles control in Kenya, depending on support from KEPI and USAID/Nairobi, and the availability of funds. These include the following:

<u>Urban EPI</u>. An assessment of the measles transmission patterns in urban areas, particularly slums, could be undertaken to identify appropriate control strategies, including increased vaccination and improved disease surveillance and outbreak control. The possibility of using a two dose measles vaccination schedule and/or Edmonston-Zagreb vaccine at an early age could be investigated

with special attention to operational aspects of their use.

Disease surveillance. Operations research could be undertaken to develop and field test simple, action-oriented surveillance tools specifically designed to meet district level needs for measles control. The cases and deaths module of CEIS will be able to provide feedback reports for timely, specific, use at the district level. These reports, in conjunction with simple surveillance methods, could indicate appropriate actions to investigate and control the occurrence and outbreaks of measles and other EPI diseasess, and suggest actions to prevent further outbreaks.

Vitamin A administration and integration with EPI. Medical issues surrounding the administration of vitamin A to young infants coming to health facilities for immunization have yet to be resolved. However, the integrated delivery of EPI and vitamin A administration to infants aged six months or older has been advised for countries with vitamin A deficiency (VAD). This should be investigated further in Kenya because VAD is both a risk factor for severe measles and its complications, and because the administration of vitamin A to measles cases has been shown to lessen the severity of the disease, even in areas without VAD. The operational aspects of vitamin A administration at EPI service delivery points deserve further attention.

Studies of quality of services, with reference to measles. Some of the reasons for lower measles coverage than for other antigens include misunderstandings about measles by health workers and inadequate identification of infants eligible to receive the vaccine. Poor quality of services resulting in client dissatisfaction also deters mothers from bringing their infants back for repeated vaccination. In districts with low coverage, a multidimensional study of quality of services could be undertaken to characterize and measure the extent of obstacles to higher measles coverage at the earliest age possible, and to identify appropriate actions to change undesirable practices.