Participant's Manual and Workbook

KPC Training Module 1: Training the Core Team

Key Contributors

The **CORE Group,** a membership association of international nongovernmental organizations (NGOs) registered in the United States, promotes and improves the health and well being of women and children in developing countries through collaborative NGO action and learning. CORE's *Monitoring and Evaluation Working Group* develops tools and trainings to increase child survival and health program performance and quality through the standardization of use of data, analysis, and reporting. This publication was made possible by support provided to CORE from the Bureau for Global Health, United States Agency for International Development (USAID) under cooperative agreement FAO-A-00-98-00030. This publication does not necessarily represent the views or opinion of USAID.

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Freedom from Hunger (FFH) focuses on the vital and interdependent connection between health and financial security for progress against chronic hunger and poverty. FFH works with direct service providers, technical assistance providers and NGOs to disseminate knowledge and tools tested and used on a global scale to build health and financial security for poor women, their families and communities. FFH is a CORE Group member.

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Abstract

The CORE Group's *Knowledge, Practice, Coverage (KPC) Survey Training Curriculum* provides trainer guidelines and participant handouts and resources to train field workers to carry out a KPC survey. The **KPC Participant's Manual and Workbook** includes three modules: *KPC Training Module 1: Training the Core Team*; *KPC Training Module 2: Training Supervisors and Interviewers;* and *KPC Training Module 3: Training the Post-Survey Analysis Team.* KPC Training Module 1 includes training resources and a full set of handouts that Core Team members can use during training. KPC Training Module 2 contains training resources and a full set of handouts for Supervisor and Interviewer use during training. KPC Training Module 3 contains training resources and a full set of handouts for Post-Survey Team use during training. All handouts included in the three modules can also be used by the KPC Survey Trainer as slides or overheads.

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The CORE Group's *Knowledge, Practice, Coverage Survey Training Curriculum* includes three manuals:

1. KPC Training of Survey Trainers: Trainer's Guide and Participant's Manual and Workbook

2. KPC Survey Training: Trainer's Guides

   Module 1: Training the Core Team
   Module 2: Training Supervisors and Interviewers
   Module 3: Training the Post-Survey Analysis Team

3. KPC Survey Training: Participant's Manuals and Workbooks

   Module 1: Training the Core Team
   Module 2: Training Supervisors and Interviewers
   Module 3: Training the Post-Survey Analysis Team

ACKNOWLEDGMENTS

Private voluntary organizations (PVOs) with funding from the U.S. Agency for International Development (USAID) Child Survival and Health Grants Program have used the Knowledge, Practice, and Coverage (KPC) Survey instrument successfully to monitor and evaluate their health programs since the early 1990s. The survey was originally created by the Child Survival Support Program at Johns Hopkins University, and has subsequently been updated and revised by the Child Survival Technical Support Project (CSTS), based at ORC-Macro, and later by the CORE Monitoring and Evaluation Working Group. Numerous PVO staff have been trained in its use, and have trained many of their partner agencies.

The dream of the CORE Monitoring and Evaluation Working Group, under the leadership of the Working Group Chair, Juan Carlos Alegre, has been to institutionalize the training so that it can be more easily adapted locally and accessed by a wider audience of NGOs, consultants, training institutions and US and overseas universities. In 2001, Tom Davis, Julie Mobley and Phil Moses created a draft curriculum that was field tested with PVO field staff of several organizations in Cambodia, and repeated in 2002 with PVO Headquarters, field staff and consultants in Myrtle Beach, NC. Sandra Bertoli, David Shanklin, Jay Edison, Juan Carlos Alegre, and Sharon Tobing provided detailed feedback on how to improve this training.

The final version of the guide is due to the feedback of many people, and the special dedication and attention to detail of the following people. Bill Weiss, Tom Davis and Juan Carlos Alegre provided input into a revised table of contents. Freedom from Hunger was selected to rewrite the curriculum due to their extensive experience in the design and development of training materials in public health and adult learning. Robb Davis, Vicki Denman, Ellen Vor der Bruegge and Renee Charleston gave numerous hours to the development, writing and formatting of the curriculum. FANTA provided funding for this activity under the leadership of Bruce Cogill and coordination of Paige Harrigan. Jennifer Luna and Jay Edison representing the Child Survival Technical Support Plus Project and John Ssekamate-Ssebuliba from Makerere University led a field test at Makerere University in Uganda in 2004 that guided changes for the final draft. Ann Brownlee and Marcelo Castrillo provided detailed comments to several of the drafts to ensure its accuracy and ease of use. CORE staff Karen LeBan and Julia Ross provided input and overall support for the production of the document. Regina Doyle designed the cover.

In addition to those persons mentioned, we want to express our appreciation and gratitude to the many individuals and organizations who were not mentioned but who have used this methodology over the years and provided input into its improvement.

December 2004

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TR 1-1: Workshop Objectives

By the end of the Core Team Workshop participants will have:

- completed critical decisions on sampling method, tabulation method, and personnel needs
- finalized key materials for the KPC survey: questionnaire, data analysis plan, and logistics plan
- produced a sampling protocol and sampling frame (location of interviews by community) and an algorithm for selecting households and respondents
- analyzed the process and preparations to train field staff to carry out a KPC survey

TR 1-2: Workshop Agenda

This page is left blank intentionally since the workshop trainer needs to provide participants with an adapted workshop agenda. The adapted agenda can be inserted here.

TR 1-3: Resource List

Materials on the Resource Table include: Technical Reference Materials (TRM), [1] CSTS Crucial CS Interventions Checklist,[2] DHS[3] and MICS,[4] Methodology and Sampling Issues for KPC Surveys, Eric Sarriot, et.al.[5]

LQAS Manual (note that the introduction to LQAS in this training is drawn from the LQAS Manual. The manual provides much more detail on many issues including the meaning of supervision areas—SA)

- Valadez, et al, Assessing Community Health Programs, Using LQAS for Baseline Surveys and Regular Monitoring (Trainer's Guide and Participant's Manual and Workbook) available from: TALC, P.O. Box 49, St. Albans, Herts, AL 1 5TX UK. http://www.talcuk.org/

Anthropometric Resources

- Source for scales, height boards, and MUAC tapes and other anthropometry needs:
  Irwin J. Shorr, MPH, MPS
  17802 Shotley Bridge Place
  Olney, MD 20832 USA
  Tel (301) 774-9006 Fax: (301) 774-0436 E-mail: ijshorr@shorrproductions.com
- Monitoring and Evaluation of anthropometric data: http://www.fantaproject.org and http://www.foodaid.org

Software Resources

- P.A.N.D.A. (Practical Analysis of Nutrition Data): A tutorial on analyzing nutrition data using SPSS from Kenya: http://www.tulane.edu/~panda2/Analysis2/ahome.html
- Download Epi-Info 2000 and manual: http://www.cdc.gov/epiinfo/
- Download EpiData: http://www.epidata.dk
- Help with statistics of any type: http://members.aol.com/johnp71/javastat.html or http://www.home.clara.net/sisa

Qualitative Research

Title II Monitoring Toolkit: http://www.foodaid.org/worddocs/moneval/toolkit/TIIToolkitIIIB.doc.

Quality Improvement and Verification Checklist for CHWs.

See: http://www.foodaid.org/worddocs/moneval/toolkit/QIVCs_1 for more information.

Other web sites of interest:
http://www.childsurvival.com
http://www.measuredhs.com
http://www.dec.org/health_pop.cfm Download examples of Child Survival documents.

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[1] Available at: http://www.coregroup.org/resources/TRM_2000.pdf
[2] Available at: http://www.childsurvival.com/tools/SOTAchecklist.doc
[3] Available at: http://www.measuredhs.com
[4] Available at: http://www.childinfo.org
[5] Available at: http://www.childsurvival.com/kpc2000/method.doc

TR 1-4: Critical Decision Points

Session	Issue	Decision:	
6	What target group(s) will be used for the KPC survey?		
13	What sampling methodology will you use? Sample size? Sampling frame _____	Cluster ___ LQAS ___ Other ___	Sample size _____ Number of SAs or Clusters _____
16	Will anthropometry be included in the KPC survey? What indices will be used? What supplies or equipment will be used? Who should be trained and for how long?		
20	How will data be analyzed?	Hand tabulation only: _____ Computer entry only: _____ Mixture of hand and computer: ___	
21	What will be the ratio of Supervisors to Interviewers? Will double entry be used as a method of ensuring quality? How will data entry people be trained? What safeguards will be set up for ensuring the quality of the data?	What steps will be taken to ensure data quality?	
23	How many Supervisors will be used? How many Interviewers will be used? Who will the Supervisors be? Who will the Interviewers be? Are there other staff needs? How many days to train Supervisors and Interviewers?		

TR 1-5: Action Plan

Because the purpose of this training is to construct various products—e.g., a logistics plan, questionnaire, etc.—we will incorporate a continuous Action Plan exercise. Throughout the five (5) days of the workshop we will be noting actions that need to be completed using the following format:

What is the Task?	Who will complete the task?	By what date will they complete the task?

TR 1-6: What a KPC Survey Can and Cannot Do

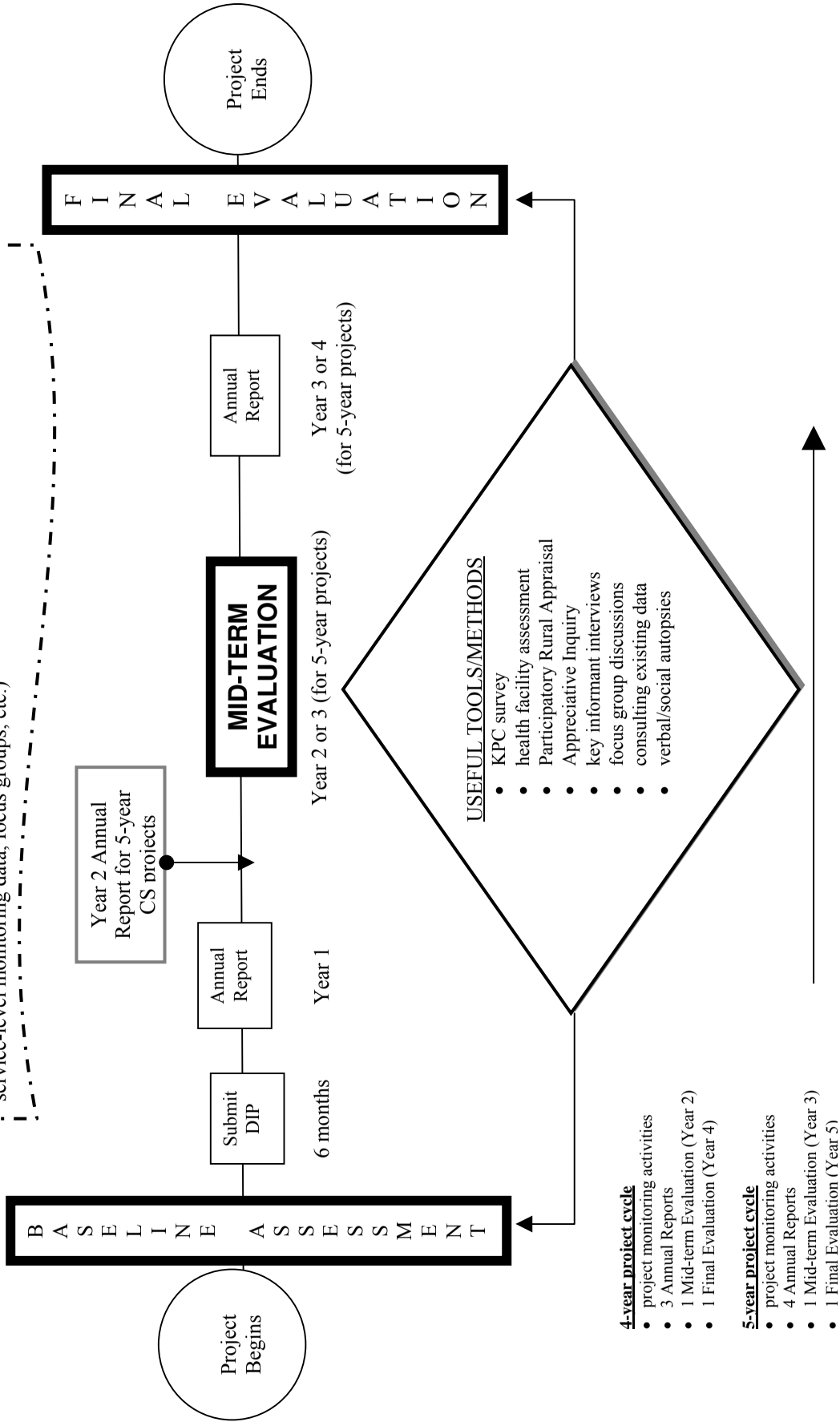
WHAT A KPC SURVEY CAN DO

- ✓ Estimate knowledge, practice and coverage levels for various health indicators
- ✓ Assist projects to identify and prioritize problems that exist within their project area (conducting a baseline KPC survey)
- ✓ Aid projects in determining whether objectives have been achieved (conducting a KPC survey at the end of a project)
- ✓ Develop local capacity to collect, analyze, and use information for decision-making
- ✓ Help build consensus between projects, local partners, and stakeholders
- ✓ Enable projects to track their progress in achieving Child Survival objectives (e.g., using a small number of KPC questions linked to benchmark indicators for project monitoring)

WHAT A KPC SURVEY CANNOT DO?

- x Measure other levels of capacity strengthening, namely the PVO, its local partners, and the community at large
- x Document the process of implementation
- x Document the achievement of goals, such as a reduction in under-5 mortality
- x Answer "Why" or "How" people are exhibiting certain behaviors

TR 1-7: General Timeline for Child Survival Monitoring and Evaluation



TR 1-8: General Timeline for Conducting a KPC Survey

DAY 1 ▪ Consult with local experts/officials to assess needs, plan survey, form KPC Coordin. Team ▪ Identify possible field supervisors	**DAY 2** ▪ Conduct formative research ▪ Identify survey targets & indicators ▪ Design questions with stakeholders ▪ Recruit supervisors	**DAY 3** ▪ Conduct formative research ▪ Design questionnaire ▪ Develop sampling strategy, analysis plan ▪ Recruit field personnel	**DAY 4** ▪ Design questionnaire with stakeholders ▪ Develop sampling strategy, analysis plan ▪ Prepare training materials ▪ Recruit field personnel	**DAY 5** ▪ Design questionnaire; translate into local language ▪ Prepare for training ▪ Recruit field personnel ▪ Finalize sampling strategy	**DAY 6** ▪ Design/translate questionnaire ▪ Prepare training, hand tabulation materials ▪ Recruit field personnel	**DAY 7** ▪ Design/translate questionnaire ▪ Recruit field personnel ▪ Prepare training materials ▪ Select sample areas
DAY 8 ▪ Prepare for training: materials, logistics ▪ Select sample areas ▪ Prepare hand tabulation tables	**DAY 9** ▪ Meet w/ supervisors for general training/ overview ▪ Conduct pre-test with supervisors; modify questionnaire based on pre-test	**DAY 10** ▪ Supervisors visit community leaders to map/identify households for survey ▪ Modify/reproduce questionnaires for training	**DAY 11** ▪ Prepare for training & field implementation ▪ Create data entry template; analysis program ▪ Meet with community leaders	**DAY 12** ▪ Finalize preparations for training & field implementation ▪ Prepare data entry/ analysis programs	**DAY 13** ▪ Prepare data entry & analysis programs ▪ Begin drafting survey report (sections on objectives, methods, questionnaire)	**DAY 14** ▪ Reproduce questionnaires & materials for training workshop ▪ Prepare data entry & analysis programs
DAY 15 ▪ Train supervisors/ interviewers ▪ Prepare data entry/analysis programs	**DAY 16** ▪ Train supervisors/ interviewers ▪ Practice interviews ▪ Prepare data entry program ▪ Finalize logistics for field implementation	**DAY 17** ▪ Train supervisors/ interviewers ▪ Practice interviews ▪ Reproduce questionnaires ▪ Finalize logistics for field implementation	**DAY 18** ▪ Identify survey teams ▪ Review protocols ▪ Finalize logistics for implementation ▪ Identify starting households ▪ Finalize entry program	**DAY 19** ▪ Data collection ▪ Data entry/cleaning ▪ Finalize analysis program ▪ Finalize hand tabulation tables for workshops	**DAY 20** ▪ Data collection ▪ Data entry/cleaning ▪ Finalize analysis program ▪ Finalize hand tabulation tables for workshops	**DAY 21** ▪ Data collection ▪ Data entry/cleaning ▪ Finalize analysis program ▪ Finalize hand tabulation tables for workshops
DAY 22 ▪ Data collection ▪ Data entry/ cleaning ▪ Run analysis program ▪ Finish tabulation tables	**DAY 23** ▪ Hand tabulation with field personnel and other individuals ▪ Draft survey report ▪ Run analysis program	**DAY 24** ▪ Analysis workshop w/ stakeholders & experts ▪ Identify health priorities ▪ Draft survey report ▪ Prepare for feedback sessions	**DAY 25** ▪ Finish first draft of survey report ▪ Refine action plan ▪ Designs ways to display KPC findings ▪ Prepare for feedback sessions	**DAY 26** ▪ Feedback at community/local level ▪ Develop action plan/ M&E plan ▪ Plan follow-up research, if necessary	**DAY 27** ▪ Brief mission, MOH ▪ Plan follow-up research	**DAY 28** ▪ Develop action plan and/or M&E plan ▪ Plan follow-up research

INCORPORATE LOCAL STAKEHOLDERS AND EXPERTS THROUGHOUT THE KPC PROCESS.

TR 1-9: Typical KPC Staffing Patterns

The principal people involved in a KPC survey include:

- Survey Trainer (trained in TOST)
- Core Team (including the Survey Coordinator and Data Coordinator)
- Supervisors
- Interviewers
- Data Entry staff
- Post-Survey Team

The Survey Trainer should have received the KPC TOST training course for KPC 2000+. This person could be a consultant or staff and is responsible for training the Core Team, Supervisors, Interviewers and the Post-Survey Team. This role could be expanded to provide technical assistance throughout the entire KPC process.

The Core Team usually consists of Survey Coordinator, Data Coordinator, and 2 or 3 additional members from a combination of the PVO, local NGO partners and the MOH. The Survey Coordinator may also be the KPC Trainer, if s/he has received the KPC TOST training. Members of the Core Team may also function as Supervisors.

The Survey Coordinator is the principal manager in the KPC survey process and should be a staff member of the PVO responsible for carrying out the KPC survey with fiscal and managerial decision-making authority.

The Data Coordinator is responsible for either computerized data entry or manual tabulation. This person should have a good background in statistics and computer skills. S/he will supervise the data entry, cleaning, and quality control of data and lead the analysis process.

The Post-Survey Team is responsible for all activities after the field work is completed: developing an analysis procedure and a plan for follow-up, providing feedback to stakeholders, and writing the survey report.

Detailed job descriptions for Supervisors and Interviewers will be developed as part of the Core Team training, but in general:

Supervisors:
Supervisors visit communities prior to the KPC survey to get approval and maps. They supervise the collection of data in the field with strict quality control

Interviewers:
Interviewers pre-test questionnaires. They interview mothers and other respondents in communities. They complete questionnaires, including a review of the documentation. They conduct anthropometric measurements

Suggested Supervisor/Interviewer Configuration for 2 Types of Sampling

Cluster Sampling: One Supervisor and 2 Interviewers are normally formed into a team with the responsibility for completing 1-2 clusters per day. Many PVOs form 5 teams (total of 5 Supervisors and 10 Interviewers). If you have 5 teams, each completing 2 clusters per day, you can complete 30 clusters in 3 days (5 teams X 2 clusters X 3 days = 30 clusters).

LQAS: One Supervisor and 2 Interviewers are normally formed into a team with responsibility for interviewing 19 respondents in one Supervision Area (SA) a day. If you have 6 SAs and 4 teams you can complete the required SAs in 1.5 days, with each of the teams doing one SA the first day and a half of a remaining SA the morning of the second day.

TR 1-10: Determining Needs and Information Gaps

Chapter 3 KPC Field Guide

One of the most important steps in preparing for a KPC survey is determining the information needs of the local context. Because of limited time and resources, projects are encouraged to use the KPC survey to gather information that:

- Cannot be found in existing data sources (or it exists, but is of poor quality)
- Can be used for either a) project planning and management or b) to estimate the effectiveness of project activities in achieving desired outcomes

CONSULT EXISTING PROJECT DOCUMENTS

Refer to existing documents such as the project's proposal or DIP to determine the following:

- Beneficiary population and related demographics
- Project goals and objectives
- Project indicators (in particular, those that can be measured in a survey)
- Which interventions to address in the survey
- Other relevant information on the target beneficiary population

CONSULT WITH LOCAL PARTNERS AND STAKEHOLDERS

This activity was discussed in the previous section of the field guide. It is listed here to remind projects to engage local partners and stakeholders in the earliest stages of the KPC process.

CONSULT OTHER SOURCES OF DATA

In addition to determining the needs of the project and stakeholders, it is useful to identify what types of information already exist. Useful information may be found in the following:

- Demographic and Health Surveys (DHS) or other national surveys (e.g., Multiple Indicator Cluster Surveys [MICS])
- Health service statistics
- Other studies (e.g., in-depth surveys, qualitative research, data from other PVOs/NGOs operating in the same geographical area).

It is not uncommon for a PVO to discover that there are a number of studies conducted within a country or a particular region of a country but little or no data on the specific project area. However, it still helps to refer to existing tools, methods, and results from other studies when designing your KPC survey. Once the KPC survey is completed, your project can compare findings from the KPC survey with existing estimates for the country or region as a whole.

Demographic and Health Surveys

DHS surveys are nationally representative household surveys with large sample sizes. Many of the topics covered in DHS surveys are also covered in the *KPC2000+*, which was modeled after the

MEASURE DHS+ standard questionnaire. Some DHS surveys have used sampling designs that yield estimates for regions (or other sub-divisions) within the country in addition to national-level estimates.

PVOs are encouraged to consult DHS or other national surveys, which will be helpful when choosing what to include in a KPC survey. Once the data have been collected and analyzed, a project can also compare KPC survey findings with findings from DHS surveys or other data to see how the project area relates to the entire nation (or a region, when such data are available) in terms of child health and survival.

FYI—For Your Information

Visit the MEASURE DHS+ Web site at **www.measuredhs.com**. The site includes a complete and up-to-date list of all DHS surveys. You can access DHS data immediately using the DHS *STATcompiler*. *STATcompiler* is an online database tool that allows users to select many countries and hundreds of indicators to create customized tables that serve their specific data needs. The *STATcompiler* accesses many of the population and health indicators that are published in DHS final reports with just the click of the mouse.

Multiple Indicator Cluster Surveys (MICS)

Since 1998, MICS have been conducted by UNICEF, in collaboration with a number of agencies and organizations, to assist countries in assessing their progress toward World Summit for Children goals. MICS assessments have been carried out in 100 less-developed countries (60 countries conducted stand-alone MICS studies and 40 countries incorporated some of the MICS modules into other studies). The MICS have provided valuable country-level data on global indicators related to child health and well-being.

FYI—For Your Information

You can access information on MICS by visiting **www.childinfo.org**. This Web site provides access to background information on the MICS, as well as the standard questionnaires, manuals, and a listing of countries where MICS studies have been conducted. Indicator data (by region and country) are also available on the Web site.

Health Service Statistics

Hospital or health center records, Community Health Worker registers, and other sources of health statistics often include information on topics such as the following:

- Immunization coverage
- Children's nutritional status
- Prevalence of childhood illnesses
- Prenatal, delivery, and postpartum care
- Child spacing
- Service use rates

Projects should keep in mind that in areas where health service use is low, health service statistics may not reflect reality. In addition, health statistics do not provide information on processes or reasons why certain patterns exist. Nevertheless, such data offer a useful perspective when identifying problems.

It is possible that findings from a KPC survey, which is a community-based assessment, provide different results than health service data. In an effort to avoid major conflicts with the MOH, it is helpful to invite district/MOH staff to participate in conducting and analyzing the survey. Projects are encouraged to be transparent in terms of how the data are collected and analyzed.

Other Studies

Before conducting a KPC survey, explore what studies have already been conducted in the area or neighboring areas. For example, another PVO might have conducted a KPC survey in a neighboring district, or maybe a graduate student conducted a qualitative investigation into local breastfeeding practices or delivery norms in select communities within the project area.

Because funding is often only on one sector, there is an inclination to search only for health studies. However, there may be studies in other sectors (e.g., education, water and sanitation, food security) that are relevant to your CS project.

As a reminder, always consider the specific information needs of your project. Even when there is some existing information for your project area, it might not relate specifically to the proposed activities of your project. Be creative in terms of modifying the generic KPC tools or using a sampling design that reflects the population groups targeted by your project. For example, it might be necessary to include grandmothers, males, pregnant women, and/or adolescents in your survey. Your tools and sampling strategy should include questionnaires and sampling plans for any additional groups you plan to target. Consult with local experts (MOH statisticians, researchers from local universities or institutions) for assistance in designing the KPC survey questionnaire (or set of questionnaires, if there are different survey targets) and a methodology that best meets the needs of your project. Also consider the limitations of a KPC survey. Local experts can be helpful in identifying and designing ways to supplement your KPC data with information obtained from other methods (e.g., qualitative research techniques).

TR 1-11: Information Needs Form

Existing Project Documents

Please check off which of the following information is available to use in designing the KPC survey:

Information/Source	Already Have	Will Obtain *	Not Available
Beneficiary population			
Target Communities with population			
Project goals and objectives			
Project indicators			
Interventions and level of effort			

Note: Keep in mind that after the proposal was submitted information may have changed to reflect comments from the Donor. Use the most current information you have.

Other Sources of Data

Please check off which of the following information sources you already have that you will obtain, or which will not be available prior to your upcoming KPC survey.

Information/Source	Already Have	Will Obtain *	Not Available
Demographic and Health Survey			
Multiple Indicator Cluster Survey			
MOH Statistics			
KPCs of other institutions in your country			
Other quantitative studies for your area			
Qualitative studies for your area			
Studies from other sectors (e.g., Agriculture)			

*Any tasks listed in "Will Obtain" should be added to the Action Plan (TR 5).

TR 1-12: Examples of Qualitative Research Techniques

- Focus group discussions
- In-depth interviews
- Key informant interviews
- Observation of events or behaviors
- Role playing
- Story completion
- Rapid Assessment Procedures (RAPs)
- Participatory Rural Appraisals (PRAs)

TR 1-13: Use of Qualitative Research in KPC Surveys

Qualitative research techniques can be used during the KPC survey in two different ways:

- **BEFORE** the KPC survey to collect background information for designing the KPC survey and to help guide survey content, wording and implementation. This is called formative research.
- **AFTER** the KPC survey to shed light on issues raised in the survey that could not be adequately explored in a structured interview.

Formative Research can be used to:

- examine the social context of issues
- define and understand populations so that programs are created to meet specific needs
- ensure that programs are acceptable to clients and feasible before launching

Examples of what can be investigated through formative research include:

- decision-making processes within households
- individual(s) responsible for the care and well-being of young children
- ***what*** and ***whom*** to include in the survey
- local words and terms used to describe certain health phenomena
- Identify common practices in order to have correct multiple-choice options:
  - First foods
  - Traditional liquids given to child with diarrhea
  - Who attends births
  - Ritual food/drink at birth
- Define target group:
  - Who makes health care decisions?
  - Who cares for children if mother is absent?
  - What language/ethnic groups are present?
- Specify MOH practices:
  - What vaccines are given? (Has this changed in last two years?)
  - What documents (maternal card, vaccine card) are used? (Has this changed in the last two years?)
- Address other issues:
  - Have TBAs been trained?
  - What documents exist in the field? What versions?
  - Develop events calendar and lexicon with local terms (also needed for translations)
  - When is the best time to conduct the survey?

TR 1-14: Involvement of Local Stakeholders in the KPC Survey
Before the survey
During the planning phase
During data collection
During data tabulation and analysis
During dissemination of results
During planning for the utilization of the information generated by the KPC Survey

TR 1-15: The Very Efficient FAST KPC

Last year, the *Foundation for Assistance in Survival Technical Group* (FAST) won a centrally funded Child Survival grant from USAID. The team members were extremely happy since they had been trying to get a grant approved for the past 12 years.

The local health director, who was now the Child Survival program manager, exclaimed: "Finally! We have tried for 12 years to get this grant, and now we have to move quickly to get it under way. We have wasted many years… it is time to start working!"

When they received notification of the grant, FAST was working in one of the two project districts that would be included in the Child Survival project area. FAST and the MOH provided the majority of health care in the district where they presently worked, Nova District. In the second area, Lanta District, where FAST was not currently working, some health services were being provided by the MOH, and some were provided by LaxCare, a small, local NGO.

FAST had held short meetings with LaxCare each year in preparation for their collaborative work together, but the meetings seemed to have gotten shorter every year. LaxCare was understaffed, but ran three health centers and several health posts in Lanta District, where they had worked for over 20 years, funded by an assortment of national and international funds. Unlike FAST, most of their staff members were local people who spoke the local language. Their employees had stuck with the organization and provided care to their communities even during the contentious and dangerous war years. LaxCare held a meeting each month in each community to discuss the community's health, suggestions they had for improving the health centers, etc. The MOH ran two Health Centers in the Lanta district, did some outreach immunization activities and held a monthly coordination meeting.

FAST began to plan its rapid KPC survey and, in order to conduct it efficiently and quickly, they composed their KPC Core Team of FAST staff members and MOH staff from Nova District. These employees could easily make it to all of the team meetings, and communication with them was very easy since they all worked in the same office or in a nearby community. FAST held meetings in three communities in Nova District during the planning process. As usual, only the men spoke, but they gave some excellent ideas to the team, such as the best time to visit their homes when mothers could be expected to be at home (in the late afternoon and evening).

The questionnaire was mostly developed by the FAST project staff, since they were the ones with a computer. A date was set for the survey. Two weeks before the survey, several FAST employees made a trip to Lanta District in order to recruit interviewers who could be used in the survey and to inform the people at LaxCare about the KPC survey. Unfortunately, LaxCare's health promoters were unavailable as interviewers since they had already planned a retreat for the week of the KPC survey.

The KPC Core team decided to use their own staff from the health center to do the interviewing and supervising.

TR 1-15: The Very Efficient FAST KPC

The interviewing during the survey process did not go well. While the men were glad to see the interviewers, many mothers said that they were too busy to be bothered with the interviews since they were preparing dinner when the KPC interviewers arrived in the afternoon. They said that they would need to come back in the morning when they had more time. (It later became known that many of the men did not want interviewers visiting their houses during the morning since they would not be at home.)

Many women in the Lanta District were fearful of the interviewers since they did not know who they were and had bad memories of outsiders during the war years, and thus refused to talk with them. One man chased an interviewer out of town with a shovel.

When women did agree to be interviewed, many of the women in both districts did not seem to understand many of the terms that the interviewers used and remained silent with puzzled looks on their faces. Some laughed loudly at the questions posed to them, inviting their older children into the room to hear the question as well.

By the end of the survey, the team was able to collect about 80 questionnaires, and began to analyze them. Unfortunately, none of the people involved with the survey except the Child Survival Program Coordinator knew how to use the software program chosen to analyze the data, so they had to rely on the Coordinator's tabulation of the data. They did not participate very much in the analysis of the data, either, since they felt that they did not really understand how the indicators were calculated.

After their rather dismal and harrowing experience in Lanta District, the team decided to communicate the results to the communities in that district through a letter sent to each LaxCare clinic. In Nova District, FAST's health information specialist prepared expensive, but very lovely three-color bar graphs to be distributed in each community. Very quickly, these graphs were found to be a main source of kindling in leaders' households. When they burned, they produced beautiful multicolored flames.

Given the lack of participation of LaxCare's staff members in the survey, the lack of acceptance of many people in the Lanta District, and the lack of community interest in their beautiful bar graphs, FAST became discouraged with trying to involve local people in their community work, and decided to just involve their own staff in the DIP-writing process.

TR 1-16: Ways to Involve Stakeholders in the KPC Survey Process

Before the survey:

- Conduct key informant interviews with community leaders, opinion leaders and other stakeholders
- Attend community meetings
- Hold meetings with staff members from local agencies and organizations to learn about the perceived needs of these stakeholders. (When women, people from certain ethnic groups or other subgroups in a community do not speak up in community-wide meetings, try to meet with these subgroups separately in order to hear their voices.)

During the planning phase:

- Survey coordination—one or two individuals from partner organizations can be asked to join the KPC Core Team
- Develop the Questionnaire—consult with local partners/stakeholders to a) identify important issues the survey should address and b) identify local terminology/concepts that make the questionnaire more context-specific
- Design the sampling strategy

During the data collection:

- Recruit local partners to be Interviewers or Supervisors
- If problems arise during data collection, explore solutions in collaboration with local partners

During the data tabulation and analysis:

- Invite local partners/stakeholders to the analysis workshop where they can use information from the completed questionnaires to calculate key indicators
- Train local partners and/or project staff to use EPI-Info for data entry and data analysis
- Work with project stakeholders to identify and prioritize health problems identified in the KPC survey and how their organization can help tackle the problem

During dissemination of the results:

- Develop methods to best present information back to community members
- Plan ways to best present information back to other stakeholders (e.g., the MOH, local NGOs)
- Work with local partners to organize and conduct community feedback sessions

During the planning—utilize the information generated by the KPC survey:

- Engage local partners in the design of the project or in the development of action plans (e.g., Detailed Implementation Plan [DIP] writing workshop)
- Encourage and help local communities and other stakeholders to come up with their own plans to work on the problems identified during the KPC survey process

TR 1-17: KPC Survey Tools—Content Overview

Topics Covered in the Rapid CATCH (26 Questions)

Topic	Question Number(s)
Interview Date	1
Respondent Age	2
Child spacing/Household Under-five Density	3–5
Child Anthropometry	6–7
Maternal/Newborn Care	8–10
Breastfeeding/Nutrition	11–13
Child Immunization	14–16
Malaria Prevention	17–19
IMCI	20–23
HIV/AIDS	24–25
Hand washing	26

Modules in the KPC 2000+ (15 Modules)

1A: Water and Sanitation

1B: Respondent Background Information

2: Breastfeeding and Infant/Child Nutrition

3: Growth Monitoring & Anthropometry

4A: Childhood Immunization

4B: Sick Child

4C: Diarrhea

4D: Acute Respiratory Infections (ARI)

4E: Malaria

5A: Prenatal Care

5B: Delivery and Immediate Newborn Care

5C: Postpartum Care

6: Child Spacing

7: HIV/AIDS

8: Health Contacts and Sources of Information

TR 1-18: KPC Rapid CATCH Question Categories	
Question Category	**Numbers of the Questions**
Measures Knowledge (K)	
Measures Practice (P)	
Measures Coverage (C)	
Measures Socio-Economic Status	
Has a “Skip” or “Jump”	
Measures Attitude	
Has a Multiple-choice Answer	
Has a “Yes” or “No” Answer	
Corresponds to a Project Indicator	

TR 1-19: Content of the 15 KPC 2000+ Modules

Module 1A: Water and Sanitation (10 questions):
- month of year
- source of drinking water
- toilet facility
- waste disposal
- hand washing

Module 1B: Respondent Background Information (7 questions):
- years of schooling
- languages/dialects spoken
- household structure
- gainful employment
- caregiver when mother is away from home

Module 2: Breastfeeding and Infant/Child Nutrition (11 questions):
- ever and current breastfeeding
- initiation of breastfeeding
- provision of colostrum and prelacteal feeds
- duration of breastfeeding
- food/liquid consumption in past 24 hours
- salt iodization
- vitamin A supplementation

Module 3: Growth Monitoring and Maternal/Child Anthropometry (12 questions):
- weighing of infant at birth
- growth monitoring
- deworming
- child height/weight
- maternal arm circumference

Module 4A: Childhood Immunization (6 questions):
- vitamin A supplementation
- immunization card possession
- immunizations received

Module 4B: Sick Child (4 questions):
- caregiver knowledge of child danger signs
- illnesses in the two weeks before the survey

Module 4C: Diarrhea (14 questions):
- diarrhea treatment/management
- sequence of care-seeking
- knowledge of ORS preparation
- household hand-washing facility
- hand-washing behavior

Module 4D: Acute Respiratory Infections (ARI) (10 questions):
- ARI treatment
- sequence of care-seeking

Module 4E: Malaria (24 questions):
- treatment/care-seeking for fever
- causes of malaria
- malaria prophylaxis during pregnancy
- bednet use, maintenance, and quality

Module 5A: Prenatal Care (13 questions):
- frequency/nature of prenatal check-ups
- tetanus toxoid immunization
- maternal health card possession
- access to nearest health facility
- decision-making for facility care-seeking
- knowledge of pregnancy danger signs

Module 5B: Delivery and Immediate Newborn Care (8 questions):
- place of delivery
- delivery assistance
- delivery practices

Module 5C: Postpartum Care (11 questions):
- postpartum check-ups
- provider of postpartum care
- knowledge of postpartum danger signs in the mother
- newborn danger signs
- content of postpartum care
- maternal vitamin A supplementation

Module 6: Child Spacing (8 questions):
- household under-five density
- length of previous birth interval
- knowledge of sources of child spacing methods
- desire for more children
- current contraceptive use
- postpartum information on child spacing

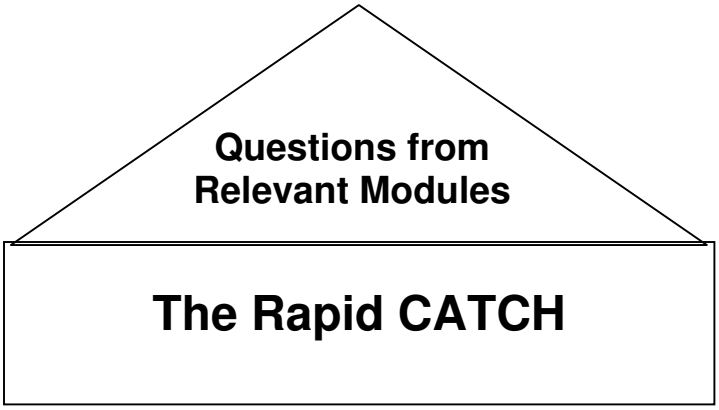
Module 7: HIV/AIDS (57 questions):
- knowledge of HIV/AIDS risk factors/modes of transmission
- risk and risk reduction
- sexually transmitted infections
- HIV screening
- stigma
- sources of care and support
- orphans/foster children

Module 8: Health Contacts and Sources of Information (3 questions):
- contact with different health providers
- frequency of contacts
- sources of information on health/nutrition
- exposure to health messages by source

TR 1-20: KPC 2000+ Module Selection Sheet

Module	Yes	No	Maybe
1A: Water and Sanitation			
1B: Respondent Background Information			
2: Breastfeeding and Infant/Child Nutrition			
3: Growth Monitoring & Anthropometry			
4A: Childhood Immunization			
4B: Sick Child			
4C: Diarrhea			
4D: Acute Respiratory Infections (ARI)			
4E: Malaria			
5A: Prenatal Care			
5B: Delivery and Immediate Newborn Care			
5C: Postpartum Care			
6: Child Spacing			
7: HIV/AIDS			
8: Health Contacts and Sources of Information			

TR 1-21: Building the KPC Survey Questionnaire



1. The Rapid CATCH

⇒ **the foundation of the questionnaire**

2. Questions from other relevant KPC modules

⇒ **to suit the specific project's objectives / indicators / activities**

<u>What</u> to include in the adapted questionnaire:

1. **Start with the Rapid CATCH**
2. **Add questions from other modules, based on <u>clarified</u> project interventions, objectives, indicators, and health messages**
3. **Clarifying project interventions involves asking:**
   - **What are the program objectives?**
   - **What indicators will be used to assess achievement of those objectives?**
   - **Are the indicators current?**
   - **Do they reflect national and international health education messages and technical standards?**
4. **Consider subgroups which you might want to explore for each indicator**

What questions need to be in the questionnaire to calculate indicators and explore differences of interest?

TR 1-22: Project Indicators Compared with KPC 2000+ Tools

Project Indicator	Rapid Catch	Module #	Numerator	Denominator

TR 1-23: KPC2000+ Rapid CATCH Indicators		
	INDICATOR	**DEFINITION**
1.	Percentage of children age 0–23 months who are underweight (-2 SD from the median weight-for-age, according to the WHO/NCHS reference population)	**Numerator** Number of children age 0–23 months whose weight **(Rapid CATCH Question 7)** is –2 SD from the median weight of the WHO/NCHS reference population for their age **Denominator** Number of children age 0–23 months in the survey who were weighed (response = 1 for **Rapid CATCH Question 6**)
2.	Percentage of children age 0–23 months who were born at least 24 months after the previous surviving child	**Numerator** Number of children age 0–23 months whose date of birth is at least 24 months after the previous sibling's date of birth **(Rapid CATCH Question 5)** **Denominator** Number of children age 0–23 months in the survey who have an older sibling
3.	Percentage of children age 0–23 months whose births were attended by skilled health personnel	**Numerator** Number of children age 0–23 months with responses = A ('doctor'), B ('nurse/midwife'), or C ('auxiliary midwife') for **Rapid CATCH Question 10** **Denominator** Number of children age 0–23 months in the survey
4.	Percentage of mothers of children age 0–23 months who received at least two tetanus toxoid injections before the birth of their youngest child	**Numerator** Number of mothers of children age 0–23 months with responses = 2 ('twice') or 3 ('more than two times') for **Rapid CATCH Question 9** **Denominator** Number of mothers of children age 0–23 months in the survey
5.	Percentage of infants age 0–5 months who were exclusively breastfed in the last 24 hours	**Numerator** Number of infants age 0–5 months with only response = A ('breastmilk') for **Rapid CATCH Question 13** **Denominator** Number of infants age 0–5 months in the survey
6.	Percentage of infants age 6–9 months receiving breastmilk and complementary foods	**Numerator** Number of infants age 6–9 months with responses = A ('breastmilk') and D ('mashed, pureed, solid, or semi-solid foods') for **Rapid CATCH Question 13** **Denominator** Number of infants age 6–9 months in the survey

TR 1-23: KPC2000+ Rapid CATCH Indicators		
	INDICATOR	**DEFINITION**
7.	Percentage of children age 12–23 months who are fully vaccinated (against the five vaccine-preventable diseases) before the first birthday	**Numerator** Number of children age 12–23 months who received Polio3 (OPV3), DPT3, and measles vaccines before the first birthday, according to the child's vaccination card **(as documented in Rapid CATCH Question 15**) **Denominator** Number of children age 12–23 months in the survey who have a vaccination card that was seen by the interviewer (response = 1 'yes, seen by interviewer' for **Rapid CATCH Question 14**)
8.	Percentage of children age 12–23 months who received a measles vaccine	**Numerator** Number of children age 12–23 months with response = 1 ('yes') for **Rapid CATCH Question 16** **Denominator** Number of children age 12–23 months in the survey
9.	Percentage of children age 0–23 months who slept under an insecticide-treated bednet the previous night (in malaria-risk areas only) ***requested of projects working in malaria endemic areas only***	**Numerator** Number of children age 0–23 months with 'child' (response = A) mentioned among responses to **Rapid CATCH Question 18** AND response = 1 ('yes') for **Rapid CATCH Question 19** **Denominator** Number of children age 0–23 months in the survey
10.	Percentage of mothers who know at least two signs of childhood illness that indicate the need for treatment	**Numerator** Number of mothers of children age 0–23 months who report at least two of the signs listed in B through H of **Rapid CATCH Question 20** **Denominator** Number of mothers of children age 0–23 months in the survey
11.	Percentage of sick children age 0–23 months who received increased fluids and continued feeding during an illness in the past two weeks	**Numerator** Number of children age 0–23 months with response = 3 ('more than usual') for **Rapid CATCH Question 22** AND response = 2 ('same amount') or 3 ('more than usual') for **Rapid CATCH Question 23** **Denominator** Number of children surveyed who were reportedly sick in the past two weeks (children with any responses A-H for **Rapid CATCH Question 21**)

TR 1-23: KPC2000+ Rapid CATCH Indicators		
	INDICATOR	**DEFINITION**
12.	Percentage of mothers of children age 0–23 months who cite at least two known ways of reducing the risk of HIV infection	**Numerator** Number of mothers of children age 0–23 months who mention at least two of the responses that relate to safer sex or practices involving blood (letters B through I & O) for **Rapid CATCH Question 25** **Denominator** Number of mothers of children age 0–23 months in the survey
13.	Percentage of mothers of children age 0–23 months who wash their hands with soap/ash before food preparation, before feeding children, after defecation, and after attending to a child who has defecated	**Numerator** Number of mothers of children age 0–23 months who mention responses B through E for **Rapid CATCH Question 26** **Denominator** Number of mothers of children age 0–23 months in the survey

TR 1-24: So, You Want to Add a Question?

SO, YOU WANT TO ADD A QUESTION?

Then ask . . .

1. "What information does the question collect, and why is it important?"

("need to know" versus "nice to know")

2. "Is there a better way to collect this information?"

(monitoring, qualitative means?)

3. "How will we use this information?"

(plan how you will analyze and use the information)

REMEMBER:

The questionnaire should include only those questions that the project will be able to use to make management or program decisions.

TR 1-25: Sampling Terminology

TERM/CONCEPT	DEFINITION
Bias:	An error that consistently results in an over- or under-estimation of a value of measurement. Bias can result from problems with how the sample was selected. Use of a random and/or systematic sampling process may help prevent this "selection bias."
Cluster:	A naturally occurring group of individuals that is likely to include a specified number of individuals from a population group of interest.
Cluster sampling:	A method of sampling population clusters rather than individuals and then interviewing a certain number of individuals within each cluster to achieve the desired sample size.
Confidence interval (limits):	Indicates the range of possible values within which the sample estimate will fall a certain percentage of the time. *Confidence limits* are the highest and lowest values within that range and are usually calculated at a level of 95%. That is, there is a 95% chance that the actual rate or proportion being estimated in the study falls within the confidence interval.
Cumulative:	Increasing a sum by continuing to add to it. For example, assume that there is a list of three communities. Community A has 40,000 people, Community B has 60,000 people, and Community C has 50,000 people. The cumulative population of Community A and Community B is 100,000 (40,000+60,000). The cumulative population of Community A, Community B, and Community C is 150,000 (40,000+60,000+50,000).
Design Effect:	Measures the efficiency of the survey design compared to Simple Random Sampling.
Lot Quality Assurance Sampling (LQAS):	A special form of stratified sampling that allows projects to identify areas with levels of coverage that are at or above expectation versus those that are below expectation
Multi-stage sampling:	A process involving more than one step of sampling before reaching the ultimate unit of interest. For example, with cluster sampling, projects first sample clusters from the population, then households within clusters and, finally, mothers/caregivers within sample households.
Probability proportion to size (PPS):	A sampling principle that ensures that the sample's distribution mirrors the population's distribution. Communities with larger populations have a proportionately greater chance of having clusters located in those communities than communities with smaller populations.
Random sample:	A method of selecting a sample to ensure that each unit in the population has a known chance of being selected (if it is a simple random sample each unit has the same probability of being selected)
Random number:	A number that is selected (by chance) from many numbers. Each number has a known chance of being selected.
Sample:	A group of units (such as individuals or households) selected from the general population.
Sample area:	Community (cluster, lot) selected from the general population for a study.
Sample size:	Number of units (individuals, households) selected from the population for inclusion in a study.
Sampling unit:	Usually the same as the unit of analysis. It is the unit from which information is collected in a survey. For KPC surveys, the sampling unit is usually the individual or the household.
Sampling frame:	List of every possible sampling unit within the target population from which a sample will be drawn.
Sampling interval:	The total population size (N) divided by the sample size (n). Used as part of systematic sampling to select units from a sampling frame.
Standard error:	Also known as *sampling error*. It is a statistical measure that indicates the precision of a sample estimate and is used to calculate the confidence limits of that estimate.
Supervision Area:	A subset of the population managed by specific health staff sampled by LQAS methodology to identify staff performance and for project management.
Systematic sampling:	A sampling approach that involves calculating a *sampling interval* based on the required sample size. A random starting point is chosen and then cases are selected from the sampling frame at a sampling interval.

TR 1-26: Sampling for Chickens

A chicken farmer wanted to find what percentage of his chickens weighed more than 1.5 kilograms. He owned more than 1000 chickens, but he only had time to catch and weigh 100 of them. He wanted his sample to be representative of all the chickens on the farm. That is, he wanted the percent of the 100 sample chickens that weighed more than 1.5 kg to be similar to the percent of all the chickens that weighed more than 1.5 kg.

He had heard from *(name of one of the participants)* that random sampling was the best way to sample, so he decided to take a "random" sample by running after all the chickens and weighing the first 100 chickens that he could catch. He thought since he was not making a conscious choice about which ones to catch, it would be a good random sample. He was very muddy and tired at the end of the day, so he hoped it was worth his effort. Was it . . .?

Adapted from the KPC TOST Manual, Appendix F, produced by CSSP.

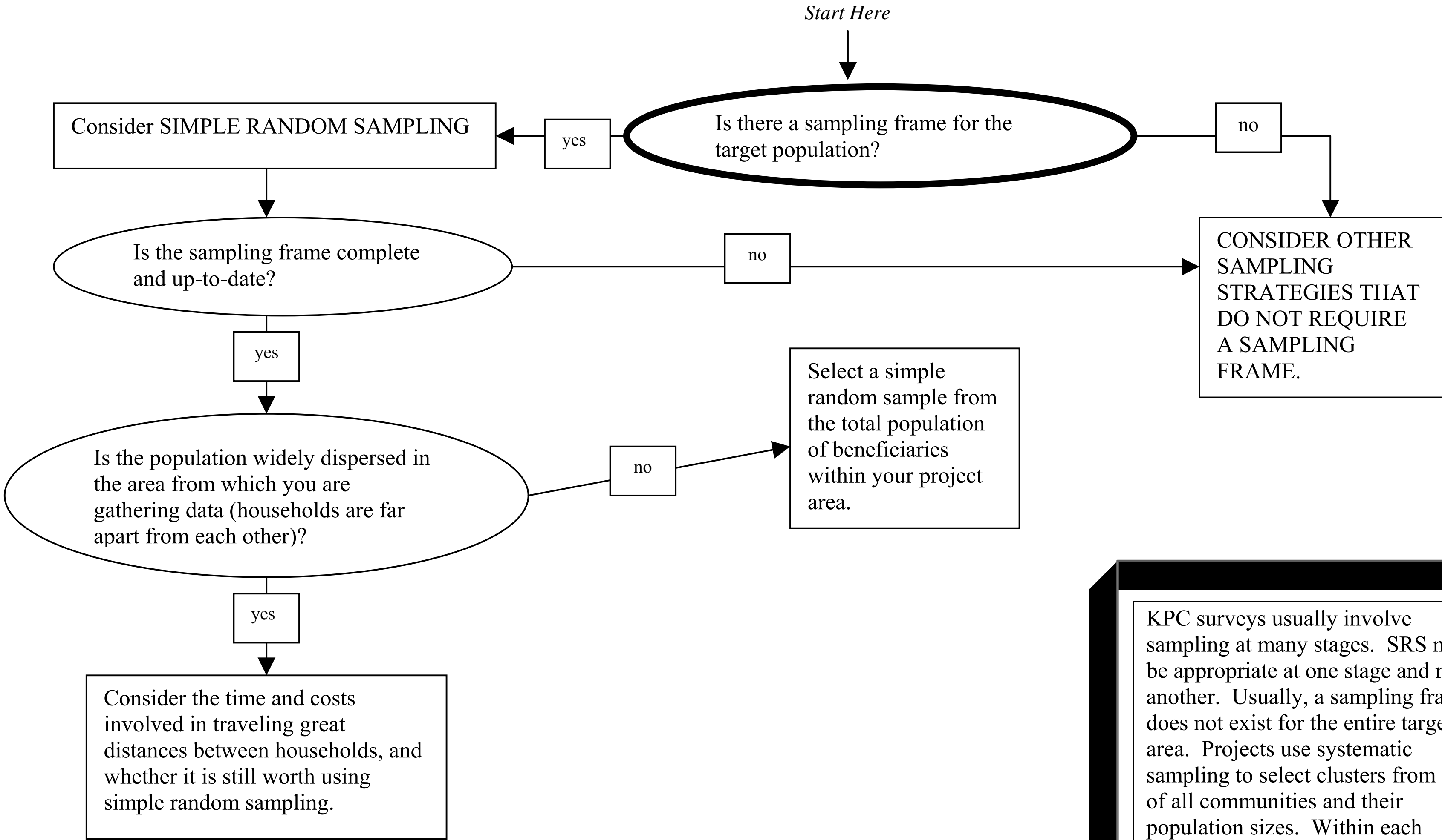
TR 1-27: Steps for Selecting a Simple Random Sample

1. Compile a *sampling frame*—this is a list of every possible unit (i.e., a register of all mothers/children <2 years old in the target communities or all households in the target communities, depending on the unit desired).

2. Assign every unit in the sampling frame a unique number.

3. Select a unit chosen randomly from all possible numbers.

TR 1-28: Simple Random Sample Algorithm
Is Simple Random Sampling Appropriate for Your Project?



KPC surveys usually involve sampling at many stages. SRS might be appropriate at one stage and not another. Usually, a sampling frame does not exist for the entire target area. Projects use systematic sampling to select clusters from a list of all communities and their population sizes. Within each selected community, however, there might be a sampling frame that would enable the project to use SRS to select households and respondents.

TR 1-29: Steps for Cluster Sampling

Cluster sampling randomly selects the cluster sites (communities) where the households are located and the first household within the cluster. The remaining households in each cluster are not chosen randomly. Cluster sampling uses the following steps:

- Compile a sampling frame. In cluster sampling, the units in the sampling frame are not individuals, but villages or communities or even city blocks. The sampling frame should include the smallest geographic/administrative units in the target population for which population data are available.
- Choose the predetermined number of cluster sites from that list of villages/ communities, using *systematic random sampling*. Thirty (30) is the number of clusters often used in cluster sampling for a KPC survey, although this can vary.
- Randomly choose a starting household. Once the cluster sites are chosen, the Interview Team should randomly choose a starting household when the team members arrive at that cluster site. This household must be chosen randomly in order to make cluster sampling valid.
- Once the first household is chosen randomly, the subsequent households are chosen based on proximity, not randomly. The "cluster" becomes a group of usually ten (10) respondents living close to that household. The Interviewers usually go door to door, choosing the next closest household to the one just interviewed.

Notes:

Cluster sampling methodology is often used because it saves a great deal of time and energy by interviewing groups of households that are usually close together.

Because households tend to be more similar within a cluster, take this into account and use the design effect of 2 for cluster sampling. Design effects are discussed in Learning Session 11.

TR 1-30: Types of Bias That May Affect a KPC Survey

- **Selection Bias**
  - ⇒ **Results from faulty sampling**
- **Information Bias**
  - ⇒ **Results from collecting faulty information**
- **Recall Bias (a type of information bias)**
  - ⇒ **Results from faulty memory of respondent**

TR 1-31: Ways to Minimize Bias in a KPC Survey

- **Assure that proper selection and interview protocols are always followed.**
- **Develop a sampling protocol that strives to achieve as much randomness as possible.**
- **Keep interviews short and questions simple.**
- **Field test questions to verify that they mean what they should to the actual respondents.**
- **Translate and back-translate questions carefully.**
- **Assure that all potential units are included in the sampling frame.**
- **Limit questions about birth and early breastfeeding practices to mothers of 0-11 month olds (with parallel sampling).**

TR 1-32: Confidence Interval Formula

P = p +/- Z * SQRT((p*q)/[n/D.E.])

where P = the actual rate/proportion in the general population
p = the survey estimate
q = 1 – p
z = the confidence level (with a 95% confidence level, z = 1.96)
SQRT = square root
n = sample size
D.E.= design effect (software packages are needed to calculate this exactly for any given variable in a survey. Cluster sampling has a D.E. of 1.5 to 2.0, and for SRS the D.E. = 1, that is, there is no design effect.)

Example:

Using cluster sampling, we find that 30 of 75 mothers of children 0-5m of age are exclusively breastfeeding. (Let us say that the calculated design effect is 2.0 for this survey.) Therefore:
P = the actual rate/proportion in the general population—this is what we want to describe.
p = 30/75 = 0.40
q = 1 – p = 1 – 0.40 = 0.60
z = 1.96
n = 75 (We do not use 300, since we only interviewed mothers of children 0-5m for this indicator.)
D.E. = 2.0

P = 0.40 +/– 1.96 * √ ((0.40 * 0.60)/ (75/2.0))
= 0.40 +/– 1.96 * √(0.24/37.5)
= 0.40 +/– 1.96 * √0.0064
= 0.40 +/– 1.96 * 0.08
= 0.40 +/– 0.1568

So adding and subtracting this amount from 0.40, you get:
= 0.2432 – 0.5568

As usual, if we want to express this result as a percentage, we just move the decimal two places to the right:
= 24.32% – 55.68%

And since we usually express these with only one decimal, you should express this as:
P = 24.3% – 55.7%

In your survey report, you could say, "There are an estimated 40% (CI: 24.3 – 55.7%) of mothers of children 0–5m who are exclusively breastfeeding in the program area." In a table in your report, you would show:

Indicator	Numerator	Denominator	Proportion (Estimate)	95% Confidence Interval	Design Effect
% of mothers of children 0–5m who are exclusively breastfeeding	30	75	40%	24.3% to 55.7% (+ / – 15.7)	2.0 (est.)

Remember: If a CI goes below 0% (e.g., – 4.2%) express it as 0%. If a CI goes above 100% (e.g., 112%), express it as 100%.

TR 1-33: Confidence Interval Worksheet

In a baseline survey, the surveyor asks mothers of children 0–23m of age, "Who assisted you with (NAME's) delivery?"
240 women mentioned a skilled health provider; 60 women mentioned another (unskilled) person.
(Assume design effect of 2.0 if calculating manually.)

Example #1:

What proportion of births was attended by a skilled provider? ____%
What is the confidence interval? ____% to ____%

At the final survey, the question is repeated:
276 women mentioned a skilled provider
24 women mentioned someone else
(Assume design effect of 2.0 if calculating manually.)

What proportion of births was attended by a skilled provider at final? ____%
What is the confidence interval? ____% to ____%

Was there a statistically significant change in the proportion of births attended by a skilled health provider? □ YES □ NO

Example #2:

At baseline, you find that 111 mothers out of 300 say that their child slept under an insecticide-treated bednet the previous night and 189 say no.
(Assume design effect of 1.0 if calculating manually.)

What proportion of children slept under an insecticide-treated bednet? ____%
What is the confidence interval? ____% to ____%

At the final survey, the question is repeated:
85 women say yes; 215 women say no
(Assume design effect of 1.0 if calculating manually.)

What proportion of children slept under an insecticide-treated bednet at the final survey? ____%
What is the confidence interval? ____% to ____%

Was there a statistically significant change in the proportion of children who slept under an insecticide-treated bednet the previous night? □ YES □ NO

TR 1-34: LQAS Sampling Results

LQAS Sampling Results

Indicator: Percent of women (15-49) who know at least 2 ways to prevent HIV transmission.

	Supervision Areas: NGO Program Area	
	A	C
Sample	# Correct (green marbles)	# Correct (green marbles)
1		
2		
3		
4		
5		

Verify "coverage" in the bag for SA A → Total green marbles in the bag / Total green and red marbles in the bag = ☐/☐ = ____ %

Verify "coverage" in the bag for SA C → Total green marbles in the bag / Total green and red marbles in the bag = ☐/☐ = ____ %

TR 1-35: Decision Rules

LQAS Table: Decision Rules for Sample Sizes of 12–30 and Coverage Targets/Average of 10%–95%																		
Sample Size*	**Average Coverage (Baselines) / Annual Coverage Target (Monitoring and Evaluation)**																	
	10%	15%	20%	25%	30%	35%	40%	45%	50%	55%	60%	65%	70%	75%	80%	85%	90%	95%
12	N/A	N/A	1	1	2	2	3	4	5	5	6	7	7	8	8	9	10	11
13	N/A	N/A	1	1	2	3	3	4	5	6	6	7	8	8	9	10	11	11
14	N/A	N/A	1	1	2	3	4	4	5	6	7	8	8	9	10	11	11	12
15	N/A	N/A	1	2	2	3	4	5	6	6	7	8	9	10	10	11	12	13
16	N/A	N/A	1	2	2	3	4	5	6	7	8	9	9	10	11	12	13	14
17	N/A	N/A	1	2	2	3	4	5	6	7	8	9	10	11	12	13	14	15
18	N/A	N/A	1	2	2	3	5	6	7	8	9	10	11	11	12	13	14	16
19	N/A	N/A	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
20	N/A	N/A	1	2	3	4	5	6	7	8	9	11	12	13	14	15	16	17
21	N/A	N/A	1	2	3	4	5	6	8	9	10	11	13	13	14	16	17	18
22	N/A	N/A	1	2	3	4	5	7	8	9	10	12	13	14	15	16	18	19
23	N/A	N/A	1	2	3	4	6	7	8	10	11	12	14	14	16	17	18	20
24	N/A	N/A	1	2	3	4	6	7	9	10	11	13	14	15	16	18	19	21
25	N/A	1	2	2	4	5	6	8	9	10	12	13	15	16	17	18	20	21
26	N/A	1	2	3	4	5	6	8	9	11	12	14	15	16	18	19	21	22
27	N/A	1	2	3	4	5	7	8	10	11	13	14	16	17	18	20	21	23
28	N/A	1	2	3	4	5	7	8	10	12	13	15	16	18	19	21	22	24
29	N/A	1	2	3	4	5	7	9	10	12	13	15	17	18	20	21	23	25
30	N/A	1	2	3	4	5	7	9	11	12	14	16	17	19	20	22	24	26

N/A: Not Applicable, meaning LQAS cannot be used in this assessment because the coverage is either too low or too high to assess on SA. This table assumes the lower threshold is 30 percentage points below the upper threshold.

Cells where *alpha* or *beta* errors are $\geq$ 10%

Cells where *alpha* or *beta* errors are > 15%

TR 1-36: What a Sample of 19 Can Tell Us

A sample of 19 is:

- **good for deciding which are the higher performing Supervision Areas, so we can learn from them**
- **good for deciding which are the lower performing Supervision Areas so we can concentrate on how to improve their performance**
- **good for differentiating knowledge/practices that have high coverage from those that have low coverage**
- **good for setting priorities among supervision areas with large differences in coverage**
- **good for setting priorities among knowledge/practices within a Supervision Areas**

(If one intervention is high but the other is low, we would concentrate on the low-coverage intervention.)

TR 1-37: What a Sample of 19 Cannot Tell Us

A sample of 19 is:

- **not good for calculating exact coverage in a Supervision Area (but can be used to calculate coverage for an entire program)**

- **not good for setting priorities among Supervision Areas that have little difference in coverage among them**

Why Use a Sample of 19?

- **A sample of 19 provides an acceptable level of error for making management decisions; at least 92% of the time it correctly identifies Supervision Areas that have reached their coverage target.**

- **Samples larger than 19 have practically the same statistical precision as samples of 19. They do not result in better information, and they cost more.**

TR 1-38: Five Supervision Areas and One Indicator

SUPERVISION AREA: A, B, C, D or E			
Indicator: Women who know two (2) or more ways to prevent HIV transmission	# Correct	Coverage Estimate = 65.3%	Equal to or above? Yes or No
Supervision Area A	12		Yes
Supervision Area B	9		No
Supervision Area C	16	Decision Rule = 11	Yes
Supervision Area D	11		Yes
Supervision Area E	14		Yes

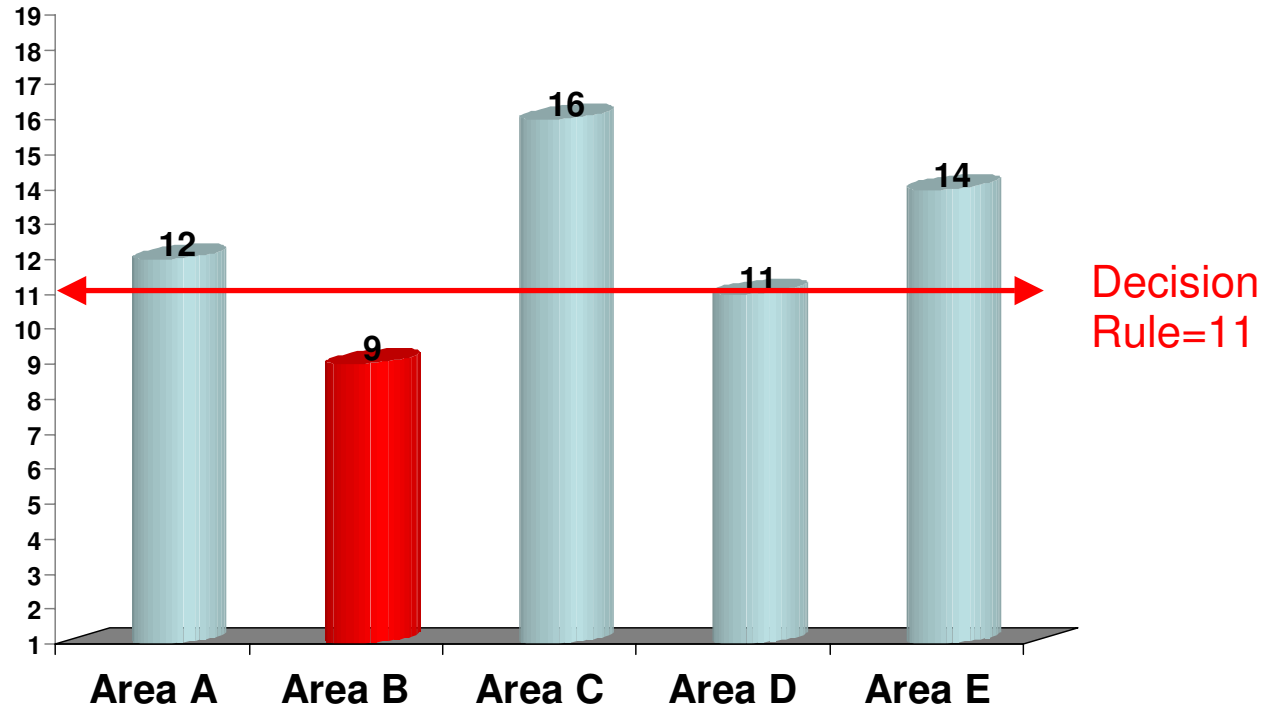
1. Add Number Correct in all SAs: 12 + 9 + 16 + 11 +14 = **62**
   Add all Samples Sizes: 19 + 19 + 19+ 19 + 19 = **95**
   Coverage Estimate = Average Coverage = 62/95 = **65.3%** = **70%**
   (Round upward to the nearest interval of 5 to find the Decision Rule)

2. Use the table in **TR 1-35** to find the Decision Rule.

3. Is coverage generally below average? Yes or no?

4. Can you identify which Supervision Areas should be your priorities?

   If yes, which are they? If not, why can't you identify them?



TR 1-39: Five Supervision Areas and One Indicator Worksheet

Indicator: Women who used condoms each time with intercourse	# Correct	Coverage Estimate =	Equal to or Above? Yes or No
Supervision Area A	7		
Supervision Area B	3		
Supervision Area C	2	Decision Rule (Using the LQAS Table) =	
Supervision Area D	13		
Supervision Area E	14		

Questions:

1. What is the average coverage? For baseline surveys, add number correct in all SAs:

   7 + 3 + 2 + 13 + 14 = 39

   Add all sample sizes: 19 +19 + 19 +19 + 19 =

   Average coverage = _____/ _____= _____

2. What is the Decision Rule? (Use **TR 1-35** to identify it.)

3. Is coverage generally below average? Yes or No?

4. Can you identify which Supervision Areas should be your priorities?

5. If yes, which are they? If not, why can't you identify them?

TR 1-40: Supervision Area A & Five Indicators

Indicators		# Correct	Coverage Estimate	Decision Rule	Equal to or Above? Yes or No
1	Women who used condoms each time with intercourse	7	45%	6	
2	Men who used condoms each time with intercourse	4	20%		
3	Women who know how HIV is transmitted	4	45%		
4	Men who know how HIV is transmitted	13	65%		
5	Women who know where to get tested for HIV	6	30%		

Questions:

1. Which indicators in Supervision Area A are below average for the program area?

2. Can you identify which indicators should be your priorities?

3. If yes, which indicators are they? If not, why can't you identify them?

TR 1-41: Comparing Supervision Areas A, B, C, D, & E

Indicators		Supervision Area				
		A	B	C	D	E
1	Women who used condoms each time with intercourse				Y	Y
2	Men who used condoms each time with intercourse	Y	Y	Y	N	Y
3	Women who know how HIV is transmitted	N	N	Y	N	Y
4	Men who know how HIV is transmitted	Y	Y	N	N	Y
5	Women who know where to get tested for HIV	Y	Y	Y	N	Y

Questions:

1. Which Supervision Area(s) appears to be performing the best for all five (5) indicators: A, B, C, D, or E?

2. Which SA(s) appears to need the most support for their overall program: A, B, C, D, or E?

3. Which indicator(s) needs improvement across most of the catchment area?

4. Which indicator(s) needs improvement in only a few SAs?

5. For these weaker indicators:

   - Which SA(s) needs special attention?

     Which SA(s) would you visit to learn possible ways to improve this indicator**?**

TR 1-42: LQAS in Monitoring and Final Surveys

	BASE-LINE	Year 1	Year 2	Year 3	Year 4
Target		50	55	60	75
Decision Rule		7	8	9	12
Rounded Average	45	45	55	70	80
Decision Rule	6	6	8	11	13
SA 1	12	13	14	12	12
SA 2	7	6*	7*	14	12
SA 3	6	9	12	11	17
SA 4	10	11	11	10	13
SA 5	5	5*	10	14	16
SA 6	6	5*	11	15	18
Average	40.4%	43.0%	50.9%	66.7%	77.2%

Which SAs are below average?

… and which have reached the coverage target?

TR 1-43: Cluster Sampling versus LQAS: Issues to Consider

ISSUE	SAMPLING METHOD	
	CLUSTER	**LQAS**
Cost	▪ Might be cheaper than LQAS if data collection is not localized (i.e., a central team of interviewers is responsible for collecting data in all subdivisions).	▪ Building LQAS into an ongoing system of supervision can reduce costs. Certain personnel can be responsible for particular subdivisions within the project area in conjunction with routine support activities. These personnel survey only in a single subdivision.
Usefulness as a Method at Baseline	▪ Fast and efficient way of obtaining program-wide information at baseline, particularly when a PVO is new to a region and does not yet know how to divide the population into subdivisions that are programmatically meaningful. ▪ Cluster sampling can be used to give an idea of the scope of a problem for the entire program area. It does not shed light on which subdivisions within the area might require additional resources for the project to achieve its objectives.	▪ LQAS can be useful at baseline to highlight which subdivisions within the project area have levels of coverage that are at or above average versus those that are below average. ▪ To be usable at baseline there must be defined (and programmatically meaningful) program management units (such as MOH supervision areas or health facility catchment areas). ▪ If certain areas are classified as above average, and others as below average in terms of coverage at baseline, a project might decide to set different objectives for certain areas.
Usefulness as a Method for Project Monitoring	▪ Not very useful for monitoring purposes because it does not identify high and low performance areas within a project.	▪ Provides management information at the local level by determining which areas are at or above a certain threshold level versus those that are below that threshold level (it cannot, of course, explain WHY differences exist).
Usefulness as a Method at the End of a Project	▪ Allows a project to assess whether or not program objectives have been met for the entire project area.	▪ Unless there are plans for a follow-on project, identifying which areas are below or above average will not be very useful at the end of a project. ▪ Aggregating data allows a project to assess whether or not program objectives have been met for the entire project area.
Precision of Aggregate (Program-wide) Estimates	▪ Usually less precise than estimates that would be obtained from a lot quality assurance sample of the same size. ▪ The precision of estimates based on cluster sampling depends greatly on the extent to which a cluster is homogeneous relative to the population (design effect).	▪ Can yield aggregate survey estimates that are more precise than estimates from a cluster sample of the **same size.** ▪ In other words, if you compared estimates from a LQAS aggregate sample of 300 with estimates from a cluster sample of 300, the LQAS estimates would probably be more precise (have narrower confidence intervals).
Local Estimates	▪ Provides only estimates for an entire program area.	▪ Not the purpose of LQAS; does not provide coverage estimates for each subdivision of a program area, only assesses whether each subdivision is above or below a particular level of coverage considered as acceptable. (Can provide estimates for an entire program area.)
Population Density	▪ In widely dispersed populations (people live far apart from one another), it is an efficient way of gathering data because it can reduce the time and money spent traveling between interviews.	▪ In widely dispersed populations, it can be time-consuming and expensive because interviewers will probably have to travel great distances between each randomly selected sampling point.

TR 1-44: Steps for Sampling Clusters with PPS

1. Calculate the sample size based on the desired level of precision and confidence. Most KPC surveys use a sample size equal to 300.

2. Determine the number of interviews per cluster. It is suggested that your project aim to conduct 10 interviews in each cluster.

3. Divide the sample size by the number of interviews in each cluster. This will give you the number of clusters. If you plan for a sample size of 300 and a cluster size of 10 interviews in each cluster, you will have 30 clusters in your survey.

4. Refer to existing population data to get the size (number of residents) of each village/town/ward in the program area.

5. Calculate the cumulative population of each village/town/ward by summing the total population of the village with the combined total population of all the preceding villages on the list (see **TR 1-45**). NOTE: the cumulative population of the last community listed in the sampling frame should equal the total population of the entire program area. If this is not the case, check your calculations.

6. Determine the sampling interval by dividing the total population of the entire program area by the total number of clusters.

7. Choose a random number. This number will be used to identify the starting point on the list to begin selecting clusters. The random number must be less than or equal to the sampling interval. As an example, if the sampling interval is 10,039 (see example in Table 5.5), you would select a random number between 1 and 10,039. As an example, assume that you used one of the techniques for selecting a random number, and chose 9,679 as the random number.

8. Look at the column where you have listed the <u>cumulative</u> population of each community and determine which community contains (that is, the cumulative population equals or exceeds) the random number. This is Cluster #1. In **TR 45,** Utaral (the first community listed in the sampling frame) has a cumulative population that equals or exceeds the random number chosen in STEP 7.

9. To identify the second community where a cluster is located, add the sampling interval (10,039) to the random number selected in STEP 7 (9,679). The community whose cumulative population equals or exceeds that number is the location of Cluster #2. Using the data in **TR 1-45** Cluster #2 is located in Talum because 10,039 + 9,679 = 19,718, and the cumulative population in Talum includes that number.

10. To identify the remaining clusters, add the sampling interval to the number that identified the location of the previous cluster.

*NOTE: A community can contain more than one cluster.

Note the same general steps can be used in LQAS for a Supervision Area except that the number of total interviews $\geq$ 19 and there is only one interview per cluster (which would be called an interview site because LQAS is <u>not</u> a cluster sampling approach). The choice of a given community simply tells you where each individual interview will take place.

Adapted from KPC 2000+ Field Guide p. 47

R 1-45: Sampling Frame for Survey Using Cluster Sampling

Formula for calculating a sampling interval:

$$\text{SAMPLING INTERVAL} = \frac{\text{Total population to be surveyed}}{\text{Number of clusters}}$$

A =	TOTAL POPULATION IN THE PROGRAM AREA	= 301,170
B =	TOTAL NUMBER OF CLUSTERS IN THE SURVEY	= 30
C =	A / B (301,170/30)	= 10,039

*It is okay to round the sampling interval to the nearest whole number. For example, if the sampling interval calculated above was equal to 10,039.3, you would round to 10,039. If it was equal to 10,039.5, round up to 10,040.

Using Systematic Sampling to Select 30 Clusters with PPS

ASSUME RANDOM NUMBER = 9,679; SAMPLING INTERVAL = 10,039

No.	Name of Community	Population	Cumulative Population	Cluster	No.	Name of Community	Population	Cumulative Population	Cluster
1.	Utaral	12,888	12,888	1	26.	Nozop	17,808	157,117	14,15
2.	Bolama	3,489	16,377		27.	Mapasko	3,914	161,031	16
3.	Talum	6,826	23,203	2	28.	Lothoah	14,006	176,037	17
4.	Wara-Yali	4,339	27,542		29.	Voattigan	9,584	185,621	18
5.	Galey	2,203	29,745		30.	Pliotok	4,225	198,846	19
6.	Tarum	4,341	34,086	3	31.	Dopoltan	2,643	201,489	20
7.	Hamtato	1,544	35,630		32.	Coccopa	26,000	227,289	21,22
8.	Nayjaff	885	36,515		33.	Famezgi	3,963	231,452	23
9.	Nuviya	2,962	39,477		34.	Jigpelay	2,115	233,567	
10.	Cattical	4,234	43,711	4	35.	Mewoah	507	234,074	
11.	Paralal	1,520	45,231		36.	Odigala	3,516	237,590	
12.	Egala-Kuru	3,767	48,998		37.	Sanbati	14,402	251,992	24,25
13.	Uwanarpol	3,053	52,051	5	38.	Andidwa	2,575	254,567	
14.	Hilandia	60,000	112,051	6,7,8,9,10,11	39.	Ore-Mikam	3,105	257,672	
15.	Puratna	2,207	114,348		40.	Dunu-Mikam	4,176	261,848	26
16.	Kagaini	1,355	115,703		41.	Kedi-Sina	1,919	263,767	
17.	Hamali-Ura	833	116,536		42.	Panabalok	3,261	267,028	
18.	Kameni	4,118	120,654	12	43.	Rokini	4,270	271,298	27
19.	Kiroya	2,782	123,456		44.	Talosso	3,301	274,599	
20.	Yanwela	3,285	126,721		45.	Djaragna	3,250	277,849	
21.	Bagvi	4,416	131,137	13	46.	Bibachi	4,670	282,519	28
22.	Atota	3,188	134,325		47.	Bilam	757	283,276	
23.	Kogouva	1,179	135,504		48.	Sisse	12,037	295,313	29
24.	Ahekpa	612	136,116		49.	Anda-Dali	2,155	297,468	
25.	Yandot	3,193	139,309		50.	Varok	3,702	301,170	30

Adapted from KPC 2000+ Field Guide p. 48
*Data taken from *Training for Mid Level Managers: The EPI Coverage Survey (WHO, 1991)*

TR 1-46: Random Number Table

64612	77930	16137	12927	89071	72799	41537	36124	90640	31518	04234
68866	19304	42847	17249	97332	86300	39716	03893	06408	32722	85956
50198	35604	77895	61969	51985	08141	33488	78995	04992	75339	94273
76698	11509	43552	41494	83724	01956	75786	19758	45947	94834	85234
73412	52071	43503	62873	53324	11284	43196	06348	30008	62652	96747
42295	74036	20944	62432	59331	89684	88553	32377	93850	12720	88238
14980	35863	08297	96342	19765	47025	29892	81190	68117	08072	25200
76350	78339	37830	99947	43444	98453	50998	75554	04195	85201	46888
01581	46405	52672	46305	08886	33547	38993	18768	14469	72645	64525
67238	13884	20162	80008	62569	22205	30546	28072	44837	49459	77149
66570	33762	21469	00199	27172	15397	82047	61497	07638	97270	37467
10557	21230	49179	29167	91844	51682	71808	45604	47827	87184	60372
09219	97504	31797	55465	99417	95123	17753	98301	97544	98741	67069
32543	64753	03363	75921	19893	88730	18290	20197	61643	60201	93416
05689	43380	65162	24128	11352	45001	03769	89504	99057	83269	71827
03507	88301	79068	65814	83846	19277	66548	97374	68215	52775	86357
28225	32562	80334	30146	61413	91111	43080	28520	49848	82813	82698
99646	08072	73891	72968	00687	38170	31209	05309	49248	05801	46112
26756	07050	27244	13452	53824	42973	53428	95469	10687	17704	61872
25235	65105	57132	92464	29317	60554	06727	88036	74389	67967	84032
25656	67440	05564	71519	49575	64287	00165	16939	41789	66082	88455
33390	91113	08488	81634	16286	46749	73217	41865	19390	67245	76632
43992	57138	00819	15070	20945	25400	57957	71599	16271	57901	62239
13893	92231	60466	90318	37897	66912	90283	37008	36989	78760	72384
66398	01315	02014	70505	34941	76983	61435	54541	97455	39820	19815
31762	31972	63350	36644	33992	44364	85710	21443	77930	38707	05182
30127	40804	64291	59007	77904	18539	75234	65215	67092	58640	63631
32105	53327	84967	52173	65105	98585	56590	57180	25674	84454	27915
57981	21947	84104	02266	33572	35803	16381	96110	52509	16049	30468
66126	26952	92400	94553	96271	66806	89957	86934	47075	94908	48846
13006	34316	09174	78732	96563	29286	02657	02883	18857	37822	77456
71463	03840	20296	13460	48767	73046	59743	77656	04051	18536	20336
85318	60674	67335	63363	48627	83227	35832	12923	73892	07336	97539
88510	93235	41827	12682	46688	41684	97946	93028	99020	15613	25315
00429	98471	73469	59309	02463	11443	64722	09558	33674	17649	97972
44234	35790	05006	84160	49844	75396	51726	15803	71185	62484	12823
68214	61165	18316	53169	33626	95181	66040	94358	24165	29731	42510
67493	04603	09947	54714	89137	40843	55749	29288	02595	75059	81300
28517	51704	63432	27444	31297	79344	37425	11817	02456	67834	74526
26333	98900	63415	89408	36714	86024	51997	81430	63751	62788	78373
99425	51007	18950	26066	09718	48619	72845	00015	78284	67907	63181

TR 1-47: Project Sampling Frame

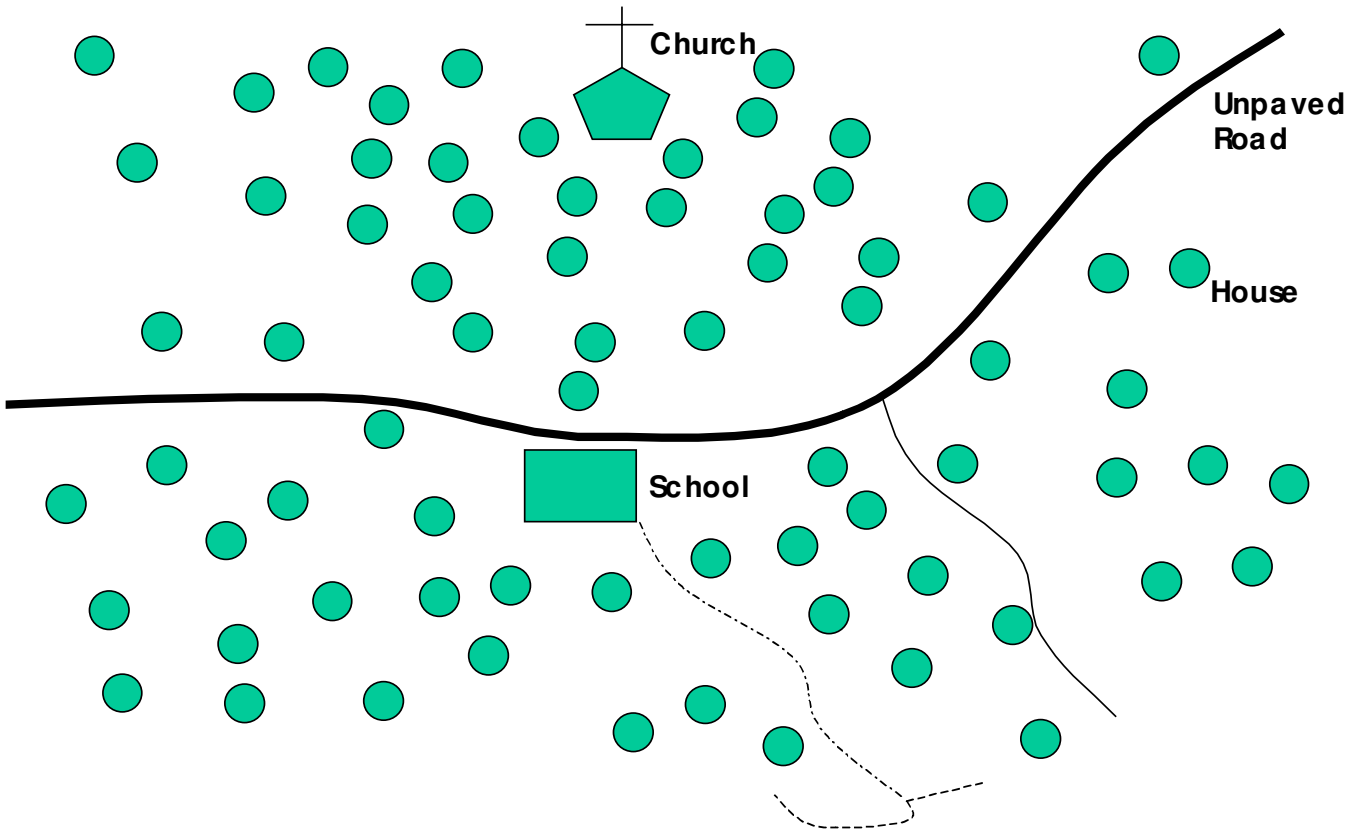
SAMPLING INTERVAL =	Total population to be surveyed / Number of clusters	
A =	TOTAL POPULATION IN THE PROGRAM AREA	=
B =	TOTAL NUMBER OF CLUSTERS IN THE SURVEY	= 30*
C =	A / B	=

*It is okay to round the sampling interval to the nearest whole number. For example, if the sampling interval calculated above was equal to 10,039.3 you would round to 10,039. If it was equal to 10,039.5, round up to 10,040.

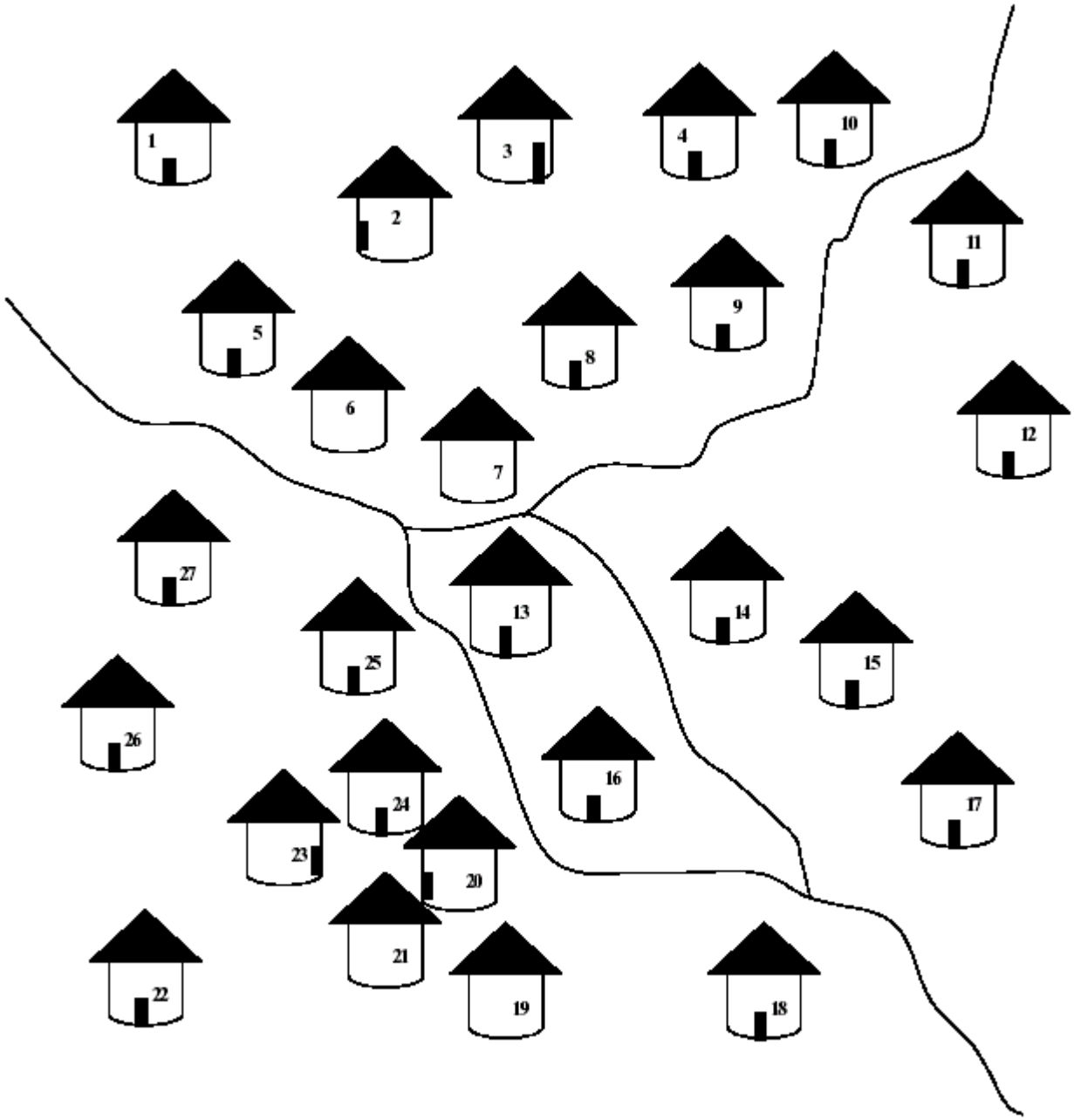
No.	Name of Community	Population	Cumulative Population	Cluster	No.	Name of Community	Population	Cumulative Population	Cluster
1.					26.				
2.					27.				
3.					28.				
4.					29.				
5.					30.				
6.					31.				
7.					32.				
8.					33.				
9.					34.				
10.					35.				
11.					36.				
12.					37.				
13.					38.				
14.					39.				
15.					40.				
16.					41.				
17.					42.				
18.					43.				
19.					44.				
20.					45.				
21.					46.				
22.					47.				
23.					48.				
24.					49.				
25.					50.				

*19 if using LQAS in a simple Supervision Area. In this case, you would not refer to a cluster but an interview site in which a single interview would take place.

TR 1-48: Village with Population Over 30 Households



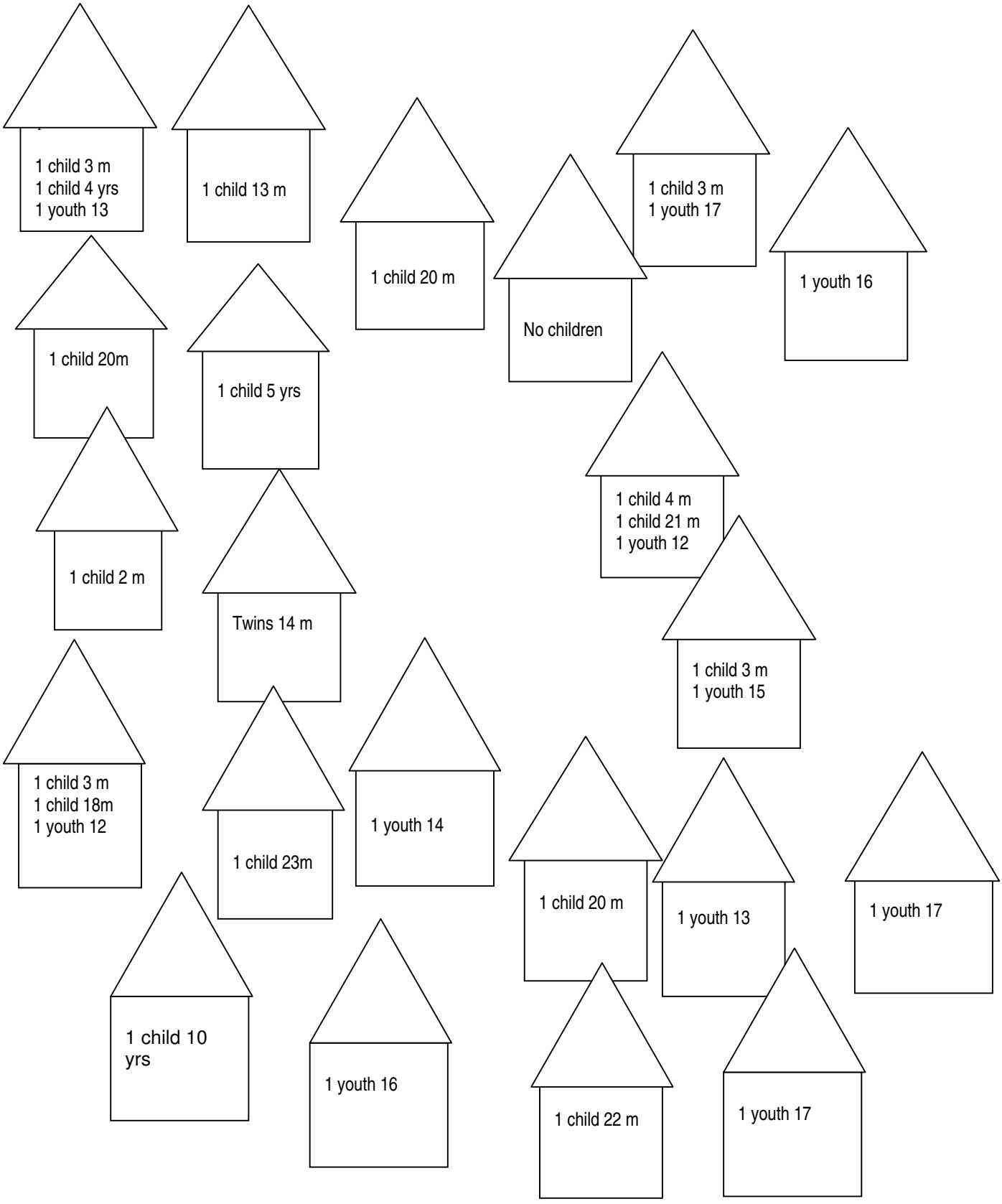
TR 1-49: Village with Population Under 30 Households



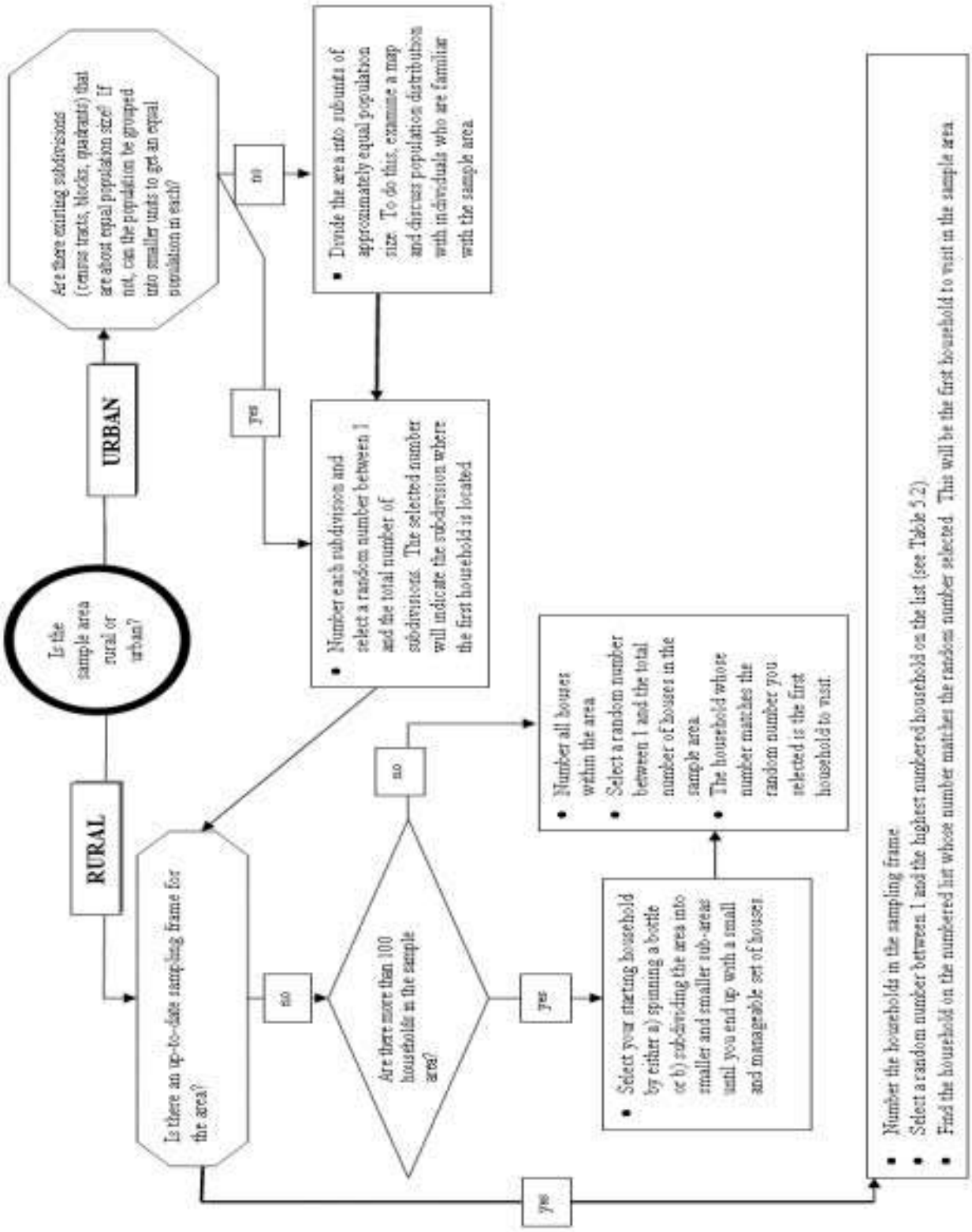
TR 1-50: Principles of Parallel Sampling

- Parallel sampling can be used when the project must interview different target populations. For example, mothers of children under 2 years of age or child survival interventions and youth 12-17 years of age for HIV/AIDS interventions.
- Parallel sampling can be used to assure enough respondents for subgroup analysis, for example, children between 0 and 6 months of age.
- Parallel sampling can save time and money otherwise needed to conduct separate studies
- Parallel sampling can save time and money otherwise needed to conduct separate studies.
- Parallel sampling can be used to assure enough respondents for subgroup analysis (children 12–23 m.).
- In most cases it is best to develop and use separate questionnaires for parallel sampling purposes, to avoid confusion.
- Parallel sampling can be used with methods other than cluster sampling (SRS, LQAS, etc.).
- VERY IMPORTANT: Do not over-represent the practices and behaviors of a particular household by interviewing more than one mother in the same household.

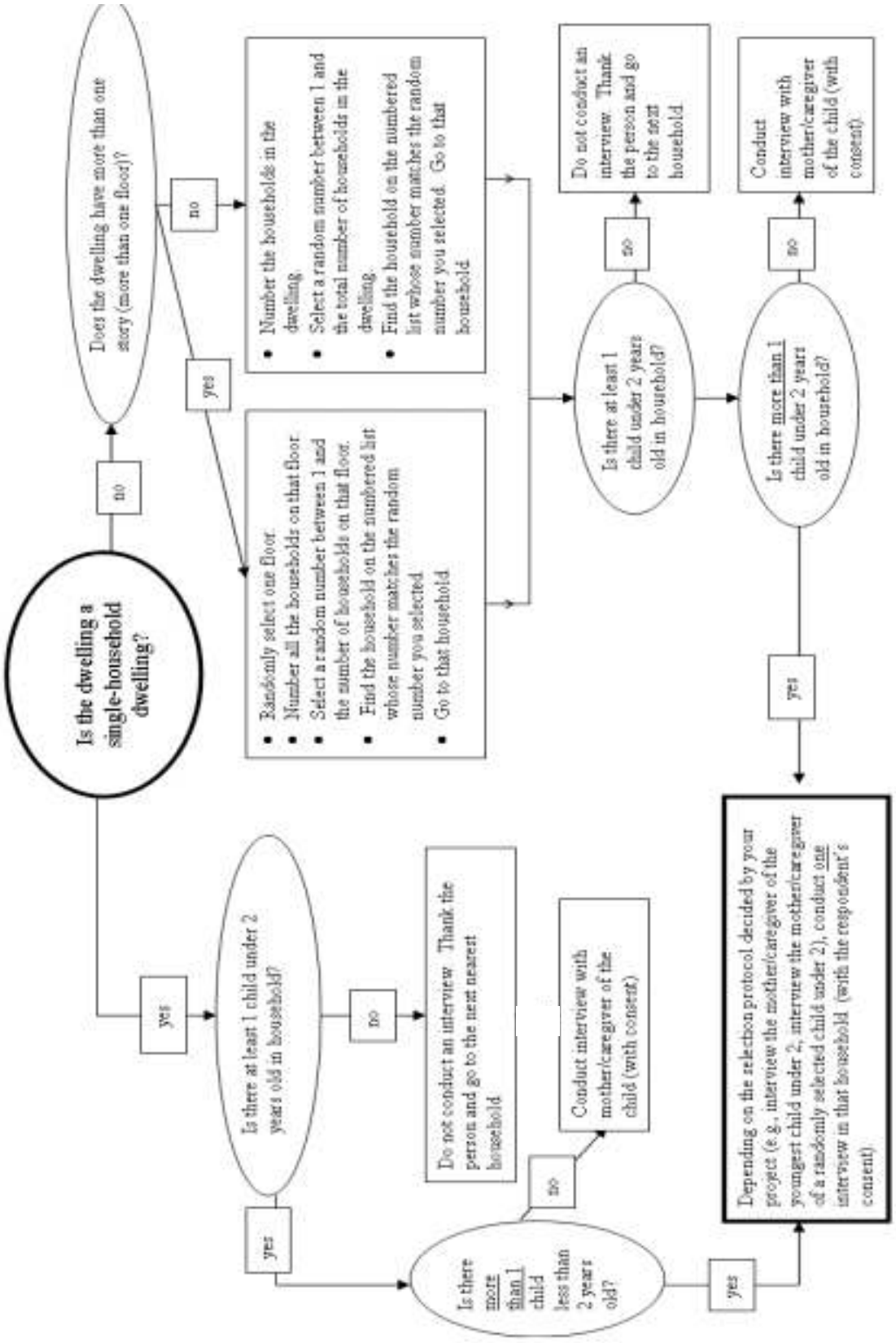
TR 1- 51: Example of Parallel Sampling



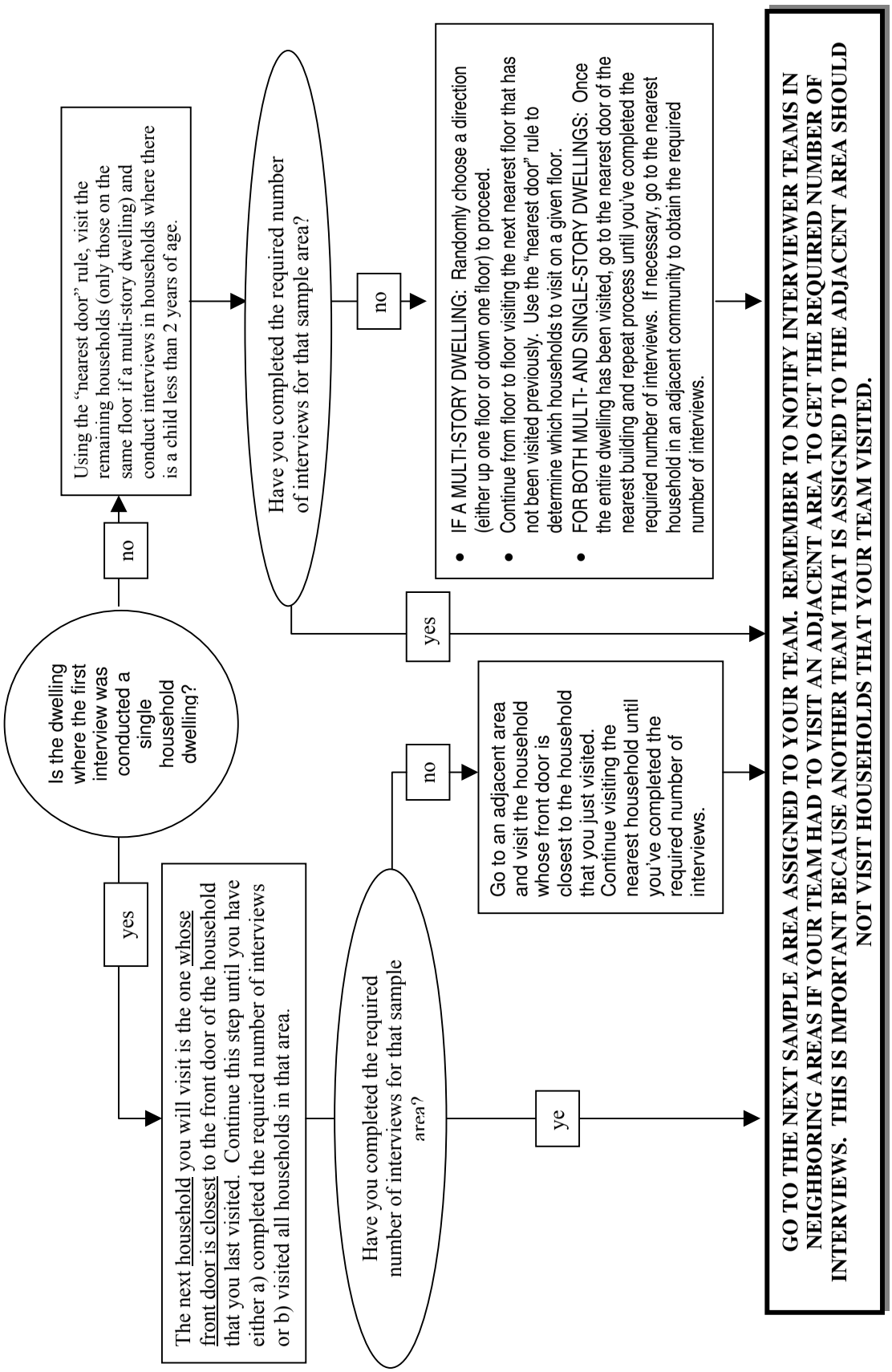
TR 1-52: Selecting the First Household in a Sample Area

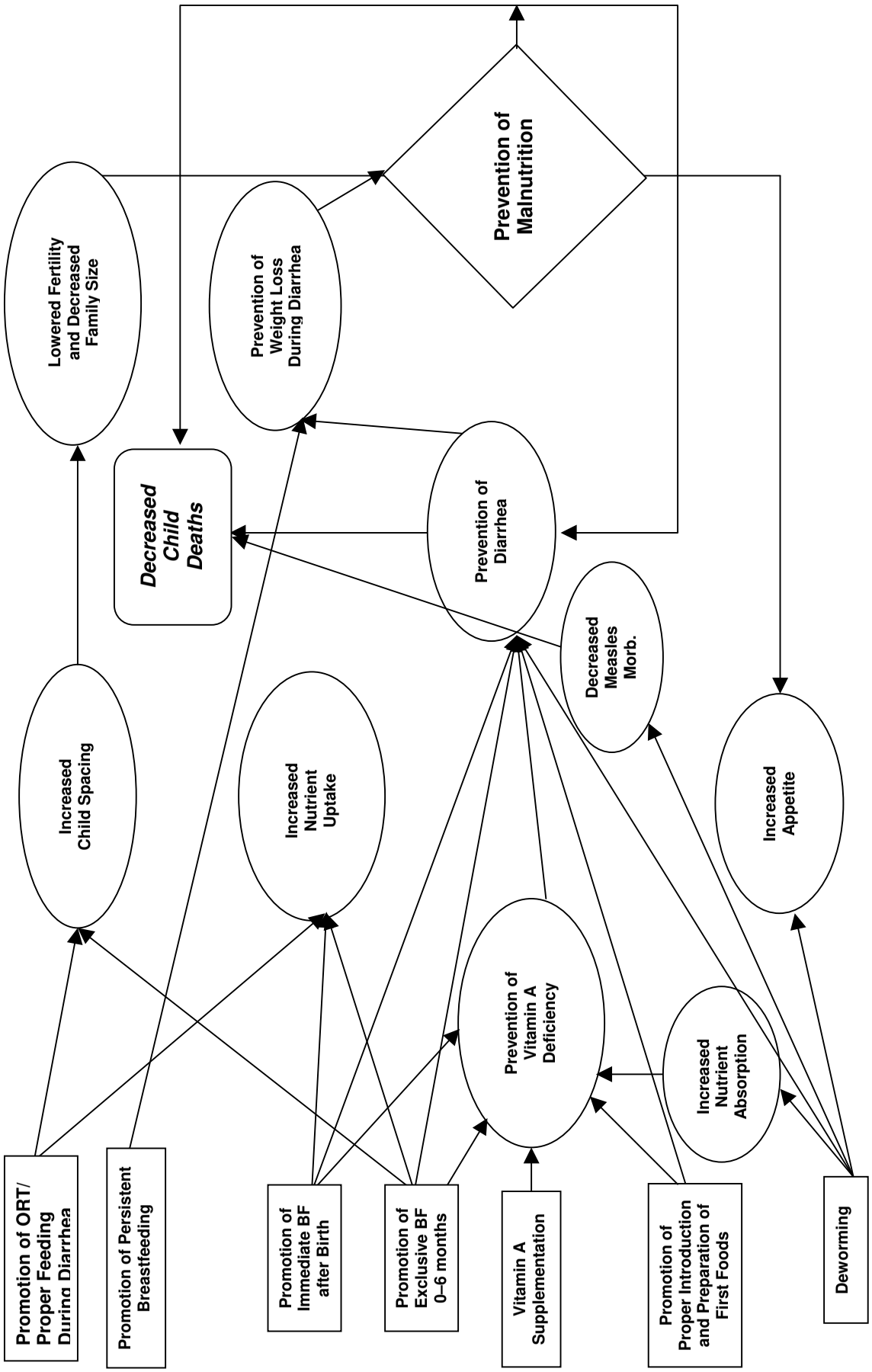


TR 1-53: Choosing Respondents Based on the Type of Dwelling



TR 1-54: Conducting the Remaining Interviews in the Sample Area




TR 1-55: Interrelationship Between Health Interventions and Malnutrition
Prevention of Malnutrition
Lowered Fertility and Decreased Family Size
Prevention of Weight Loss During Diarrhea
Decreased Child Deaths
Prevention of Diarrhea
Decreased Measles Morb.
Increased Child Spacing
Increased Nutrient Uptake
Increased Appetite
Prevention of Vitamin A Deficiency
Increased Nutrient Absorption
Promotion of ORT/ Proper Feeding During Diarrhea
Promotion of Persistent Breastfeeding
Promotion of Immediate BF after Birth
Promotion of Exclusive BF 0–6 months
Vitamin A Supplementation
Promotion of Proper Introduction and Preparation of First Foods
Deworming

TR 1-56: Data Needs, Materials and Personnel for Index Measurements			
Index	**Data Needs**	**Materials**	**Personnel**
Weight-for-age	Weight, sex, age in months *[or Date of Birth – DOB]* and weighing date	Calibrated hanging scales with a precision of 200g or better, two pair of weighing pants per interviewer, two slings for weighing babies for each interviewer, recording form, events calendar for calculating child's age in months, cleaning cloth and soap for cleaning pants.	One person can take the weight of a child. (The mother often helps by holding the child.)
Height-for-age	Height, sex, age in months *[or DOB]* and measurement date	Calibrated height board with a metal (non-stretchable) tape, towel (for cleaning height board when necessary), recording form, events calendar.	Two or three people are needed to measure one child accurately.
Weight-for-height	Weight, height, sex, age in months *[or DOB]* and measurement date	All the same data as needed for Weight-for-age and for Height-for-age.	All the same people as needed for Weight-for-age and for Height-for-age.
Mid-Upper Arm Circumference (MUAC)	Middle-arm circumference and confirmation that child is between 12 and 59 months of age	Two insertion tapes per interviewer, events calendar, recording form, and balloons or something else to measure during practice sessions.	One person can take a child's MUAC without outside assistance. (The mother often helps by holding the child.)

TR 1-57: Anthropometry Training Tips

Decision 1: Train a Special Team or All KPC Interviewers?

Advantages of Training a Special Team

a. The special Team concentrates only on anthropometry
b. It avoids the need for using interviewers who may have a heavy workload and limited training time
c. It may require fewer measuring instruments—each team needs only one set

Advantages of Training All KPC Interviewers:

a. The person needed for weighing and measuring is always available
b. It increases awareness of the importance of anthropometry

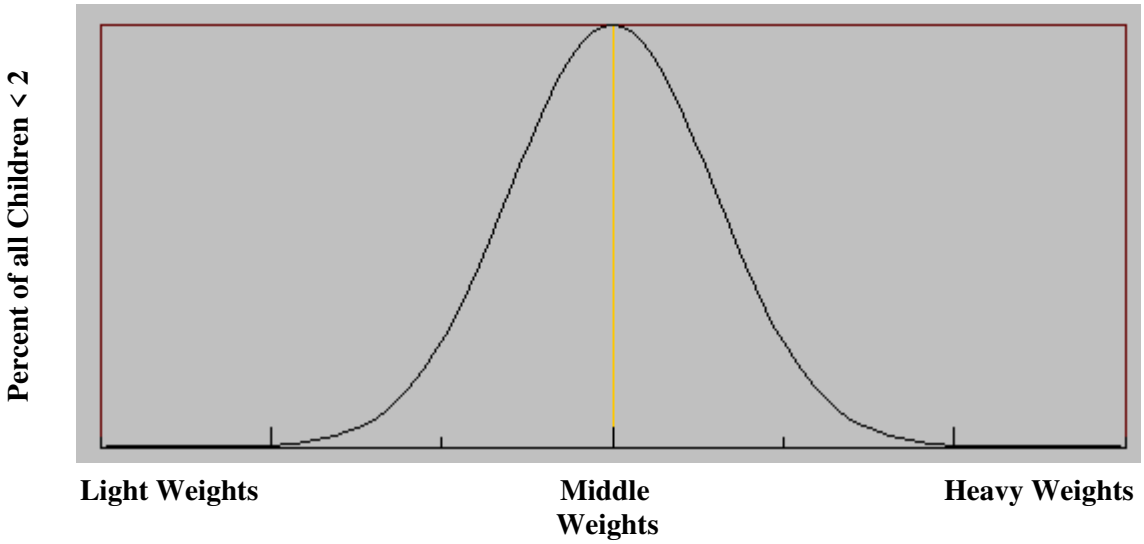
Decision 2: Mobile vs. Stationary Teams—team moves from house to house or remains in a specific location, e.g. a school.

Training objective:	Measure competently with minimal measurement error.
Training time including practice:	
Weight only:	1 day
Weight, height, MUAC:	2 to 3 days

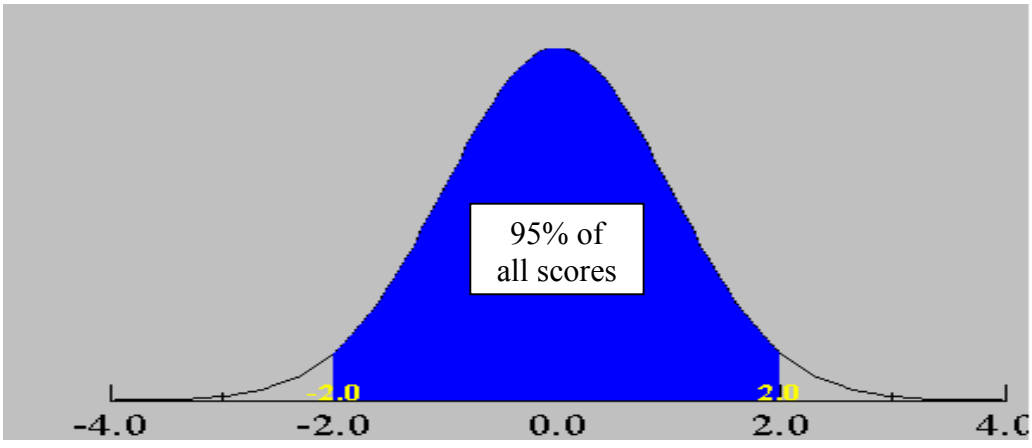
When anthropometry is part of a KPC survey, schedule the training just before data collection begins.

TR 1-58: What Is a Z-score?

Z-scores are not particular to anthropometry but are a general statistical concept used to describe any measure that is normally distributed. A normal distribution is one that is symmetrical about its mean (average). This means that the curve on either side of its mean is a mirror image of the other side. Here is a picture of a normal curve. The measure could be weights or weight-for-age for healthy, well-fed children since their weights and the weight-for-age index has been found to be normally distributed. In this picture, the percent of children would be on the left axis and the weights would be on the bottom axis. So, very few children would have low weights and very few would have high weights. Most would be clustered somewhere in the middle.

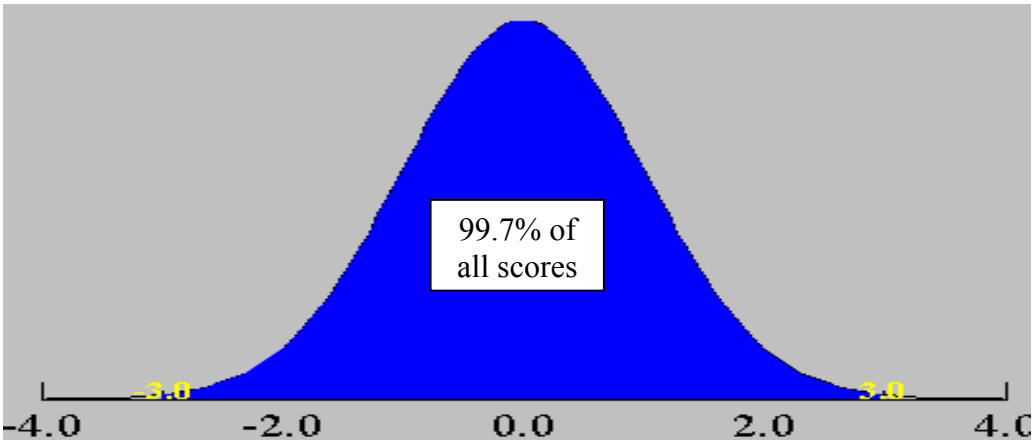


In this graph, the actual weights are graphed but any normal curve like this one can be "standardized" so that the middle value is zero and values go out on either side of it in increments of 1, 2, 3, etc. or –1, –2, –3, etc. These distances or increments are called "standard deviations" BUT are also called Z-scores. When the normal curve is standardized, it has certain important features that are important for our discussion of Z-scores in anthropometry. First, in a standardized distribution, 95% of ALL observations (weights, for example) lie within + and –2 standard deviations of the mean. The next diagram shows this:



This means that 5% of observations are greater than or less than 2 standard deviations from the mean or only 2.5% of observations are below –2 standard deviations.

Further, 99.7% of all observations in a standard normal distribution lie within + or –3 standard deviations—or only 0.3% lie outside this range or only 0.15% lie below –3 standard deviations as the next image shows.

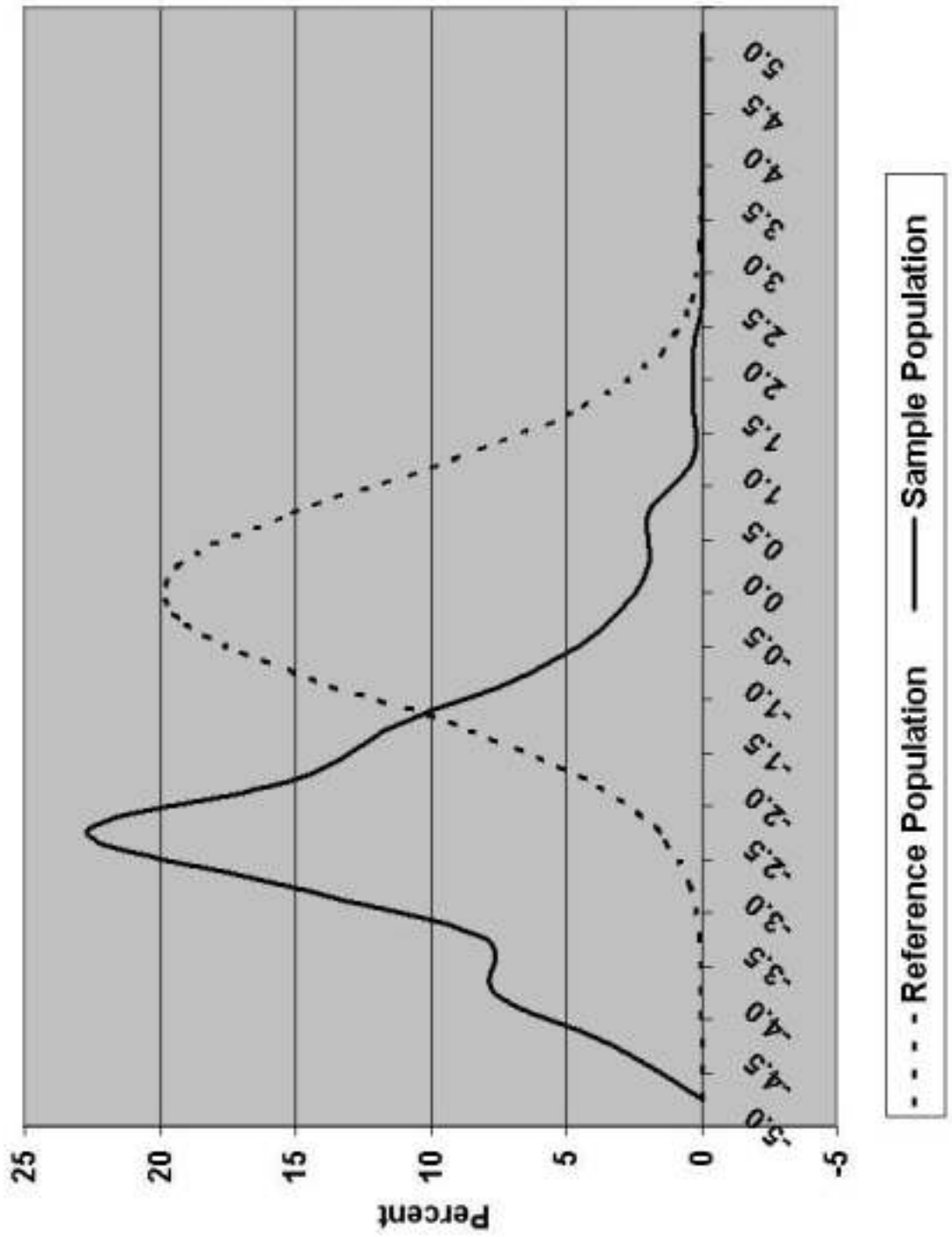


With this information in mind we can now examine how this all applies to anthropometry. WHO and the CDC have taken the weights (and heights) for healthy, well-fed children under 5 and the weight-for-age index is normally distributed. This "reference" population has been "standardized" and all weight-for-age scores turned into "standard deviations" or Z-scores. When we take measures of our population, using a statistical package like Epi-Info, we can translate our results into Z-scores as well.

Once we have Z-scores for our population we can compare our population very easily to the reference population of healthy, well-fed children. Remember, since the reference population's scores are normally distributed and standardized, only 2.5 percent of children have weight-for-age Z-scores below –2. Also, less than 0.15% of children in the comparison population have Z-scores below –3. Therefore, if we find that a much larger percentage of our population's children have Z-scores below –2 or –3, we might conclude that malnutrition is a problem in our population.

TR 1-59: Graphing Z-scores Compared to the Standard Population

Weight for Age (or Height for Age or Height for Weight Z-Scores compared to the standard population



TR 1-60: Malnutrition and Z-scores

Malnutrition in the Population (children under 2 years of age) (Proportion mildly, moderately and severely malnourished)

Category of Malnutrition	Percent	Cumulative Percent
Mildly Malnourished (z-score < -1 and > -2)	42.3%	42.3%
Moderately Malnourished (z-score < -2 and > -3)	22.7%	65.0%
Severely Malnourished (z-score < -3)	12.7%	77.7%
Not Malnourished (z-score > -1)	20.3%	100.0%

TR 1-61: Displaying Malnutrition by Sex

Moderate and Severe Malnutrition in Children under 2 Years of Age by Gender

	Boys <2	Girls <2
Moderately or Severely Malnourished (z-score < - 2)	33.2%	41.2%
Not Moderately or Severely Malnourished (z-score > - 2)	66.8%	58.8%

TR 1-62: Frequency Tables

An indicator of interest in a given project was:

The percentage of mothers of children 0–23 months who cite at least two (2) known ways of reducing the risk of HIV infection. Here are two frequency tables that present results of interest for this indicator. How are the two linked? (Hint: Think about "question" versus "indicator") Why might you use a cumulative percent in the second table but not in the first?

What can a person do to avoid getting AIDS or the virus that causes AIDS?

n = 300

Mother's Reply	Number	Percent
ABSTAIN FROM SEX		
USE CONDOMS	12	4%
LIMIT SEX TO ONE PARTNER/STAY FAITHFUL TO ONE PARTNER	26	8.7%
LIMIT NUMBER OF SEXUAL PARTNERS	10	3.3%
AVOID SEX WITH PROSTITUTES	9	3%
AVOID SEX WITH PERSONS WHO HAVE MANY PARTNERS	16	5.3%
AVOID INTERCOURSE WITH PERSONS OF THE SAME SEX	36	12%
AVOID SEX WITH PERSONS WHO INJECT DRUGS INTRAVENOUSLY	8	2.7%
AVOID SHARING RAZORS, BLADES	0	0%
NOTHING	47	15.7%
AVOID BLOOD TRANSFUSIONS	4	1.3%
AVOID INJECTIONS	13	4.3%
AVOID KISSING	27	9%
AVOID MOSQUITO BITES	25	8.3%
SEEK PROTECTION FROM TRADITIONAL HEALER	11	3.7%
OTHER	43	14.3%
DID NOT KNOW	178	59.3%

Percentage of mothers of children age 0–23 months who cite at least two (2) known ways of reducing the risk of HIV infection

n=300

	Number	Percent	Cumulative
Mentioned 2	27	9%	9%
Mentioned > 2	9	3%	12%
Mentioned 0/Did not know	231	77%	89%
Mentioned 1	33	11%	100%

TR 1-63: 2x2 Table and Odds Ratios

Two-by-two tables used in epidemiology often place disease existence YES (+) or NO (–) on the top and "exposure" to risk factors YES (+) or NO (–) on the left hand side of the table. In a 2x2 table you can present both absolute numbers and percentages in the individual cells and present totals for rows and columns.

Example: Two-by-Two Table		
	DISEASE	
EXPOSURE	+	–
+		
–		

In our work, we may replace "disease" with an "outcome of interest" and we may replace "exposure" with some "subgroup of interest" such as the following (the first one is taken from a previous learning session):

Malnutrition and Sex of Child		
	Nutritional Status	
Sex	Z-score < –2	Z-score ≥ –2
Male		
Female		

Age of Mother and Knowledge of How to Prevent HIV Transmission		
	Knows 2 ways to Prevent HIV Transmission	
Age of Mother	Yes	No
< 25 years old		
≥ 25 years old		

Use of Pre-Natal Clinic by Ethnicity		
	Mother Went for 2 or More Pre-Natal Visits During the Pregnancy of Her Youngest Child	
Ethnic Group	Yes	No
A		
Not A		

While having the absolute numbers or percentages in each cell can help you, another measure—known as an **odds ratio**—can help summarize in one number whether the "exposure" (being in a subgroup or having some other characteristic) is associated with increased (or decreased) illness, malnutrition or use of services.

In general, if tables are set up like the ones above, an odds ratio of >1 indicates there is some positive association between being in the first exposure group (Male, Women < 25 or Ethnic Group A, in the examples above) and the outcome (being malnourished, knowing 2 ways to prevent HIV transmission or going for a pre-natal visit). If the odds ratio is less than one, that means the association is negative.

So, for example, if in the first table above the odds ratio is 3, this would indicate that being male may make a person 3 times more likely to be malnourished than being female.

In the second example, if the odds ratio were 1.5, this would indicate that being a female under 25 years of age makes a woman 1.5 times more likely to know 2 ways to prevent HIV transmission than a woman older than 25.

Finally, if in the last example the odds ratio were 0.05 (less than 1), this would indicate that being in Ethnic Group A makes a person 0.05 times as likely to go for 2 or more pre-natal visits (in other words LESS LIKELY) than for other ethnic groups.

It is fairly easy to calculate an odds ratio. Let us look at the basic table and add letters to each cell:

Example: Two-by-Two Table		
	DISEASE	
EXPOSURE	+	–
+	a	b
–	c	d

The odds ratio is simply (a*d)/(c*b)

TR 1-64 and **TR 1-65** provide some numeric examples.

Some important caveats:

At first glance 2x2 tables and the simple odds ratios might seem like a great idea because of their great explanatory power, but there are some important caveats:

1. Odds ratios provide information on association between variables but association is not the same as causality. Do not confuse these ideas. Having a positive association between variables does NOT NECESSARILY mean that being in a certain exposure group makes you more likely to have a given outcome. You may actually be measuring some other (related) characteristic or there may be a more complex picture to look at with many variables leading to certain outcomes.

2. Just like simple frequencies, odds ratios should NEVER be reported without providing confidence intervals. If an odds ratio's confidence interval includes 1, then we cannot say with any certainty that the simple odds ratio we calculated holds. Indeed, with an odds ratio that overlaps 1, the "exposure" could be either positive or negative. Epi-Info and other statistical programs will produce odds ratios and their confidence intervals and these must also be adjusted for the kind of sampling used (like cluster sampling).

   The problem we face in many KPC surveys is that the relatively small number of cases in each cell often yields odds ratio confidence intervals that DO include 1.

The important result of these realities is that we should avoid developing many cross-tabs. We should also interpret results very carefully.

TR 1-64: Tetanus Toxoid Immunization and Mother's Age

Received at Least 2 Tetanus Toxoid Injections Before the Birth of Youngest Child		
	Received at Least 2 Tetanus Toxoids	
Age of Mother	Yes	No
< 25 years old	64	115
≥ 25 years old	20	101

Odds Ratio: 2.82
95% Confidence Interval for the Odds Ratio: 1.54 – 5.17

TR 1-65: Malnutrition and Feeding Practices

Malnutrition and Feeding Practices		
	Malnourished	
Feeding Practice	Yes	No
Child encouraged to eat when sick	6	12
Child not encouraged to eat when sick	9	1

Odds Ratio: 0.06
95% Confidence Interval for the Odds Ratio: 0 – 0.62

TR 1-66: Why Tabulate Data BY HAND??

Purpose:
To increase ownership and understanding of the analysis process and results by local stakeholders. Analysis is defined as the breaking up of the whole into its parts to find out its true nature. By tabulating by hand, you start with the "parts," making the "whole" much more understandable and relevant.

And, hand tabulation . . .

- **gives a hands-on feeling for what the data mean to a larger number of people**
- **provides a prime opportunity for all stakeholders to work directly with the data and identify and prioritize problems as a group**
- **offers a sense of transparency in terms of how the data are collected, analyzed, and interpreted**
- **helps build consensus among stakeholders**
- **can help validate the results generated by a computer**

TR 1-67: What to Look for When Tabulating/Analyzing KPC Data

It is not necessary to tabulate every survey question or all of the KPC indicators during the workshop, if computer analysis will be done later.

So, look at:

- **Project indicators:**
  - ⇒ **If time permits, choose at least one indicator for each of the project's technical interventions**
  - ⇒ **Refer to your KPC Data Analysis Plan (which will be developed in Learning Session 22)**
- **Rapid CATCH indicators**
- **Other variables that are of interest to workshop participants**
- **Associations between variables (cross-tabs, differentials)**

TR 1-68: Who Should Be Involved?

- **All KPC Core Team members**
  (can help facilitate)
- **Survey Supervisors and Interviewers**
- **Local partners and stakeholders**
  (especially if they are not directly involved in data collection activities)
- **Other individuals affiliated with health/development organizations working in the same geographic area**
- **Local communication specialists, water and sanitation experts, or qualitative researchers, if appropriate**

<u>But keep the group size manageable.</u>

TR 1-69: % Mothers w/2 TT Doses Before Birth of Youngest Child

How many times did you receive a TT injection?

CATEGORY		MARKS	FREQ	%	CUM FREQ	CUM %
1	ONCE					
2	TWICE					
3	> TWO TIMES					
8	DON'T KNOW					
	SKIPPED					
TOTAL NUMBER OF MOTHERS					300	100.0
OVERALL FINDING BASED ON THIS TABULATION:						

Indicator: % of mothers with at least 2 TT before the birth of the youngest child

CATEGORY	MARKS (or calculations)	FREQ	%
Yes (Q.9 = 2 or 3)			
No (include skips)			
TOTAL NUMBER OF MOTHERS IN DENOMINATOR		300	100.0
OVERALL FINDING BASED ON THIS TABULATION:			

TR 1-70: % Mothers w/2 TT Doses Before Birth of Youngest Child with (Data) Marks

How many times did you receive a TT injection?

CATEGORY		MARKS	FREQ	%	CUM FREQ	CUM %
1	ONCE	~~IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII~~ II				
2	TWICE	~~IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII~~				
3	> TWO TIMES	~~IIII IIII IIII IIII IIII IIII~~ III				
8	DON'T KNOW	~~IIII IIII IIII~~ II				
	SKIPPED	~~IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII~~ III				
TOTAL NUMBER OF MOTHERS					300	100.0
OVERALL FINDING BASED ON THIS TABULATION:						

Indicator: % of mothers with at least 2 TT before the birth of the youngest child

CATEGORY	MARKS (or calculation)	FREQ	%
Yes (Q.9 = 2 or 3)			
No (include skips)			
TOTAL NUMBER OF MOTHERS IN DENOMINATOR		300	100.0
OVERALL FINDING BASED ON THIS TABULATION:			

TR 1-71: % Mothers w/2 TT Doses Before Birth of Youngest Child With Answers

How many times did you receive a TT injection?

CATEGORY		MARKS	FREQ	%	CUM FREQ	CUM %
1	ONCE	~~IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII~~ I I	82	27.3	82	27.3
2	TWICE	~~IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII~~	75	25.0	157	52.3
3	> TWO TIMES	~~IIII IIII~~ ~~IIII IIII IIII IIII~~ I I I	33	11.0	190	63.3
8	DON'T KNOW	~~IIII IIII IIII~~ I I	17	5.7	207	69.0
	SKIPPED (NONE)	~~IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII~~ I I I	93	31.0	300	100.0
TOTAL NUMBER OF MOTHERS					300	100.0
OVERALL FINDING BASED ON THIS TABULATION:						

Indicator: % of mothers with at least 2 TT before the birth of the youngest child

CATEGORY	MARKS (or calculation)	FREQ	%
Yes (Q.9 = 2 or 3)	(75 + 33)	108	36.0
No (include skips)	(82 + 17 + 93)	192	64.0
TOTAL NUMBER OF MOTHERS IN DENOMINATOR		300	100.0
OVERALL FINDING BASED ON THIS TABULATION: *36% of mothers had at least 2 TT before birth of youngest…*			

TR 1-72: Sample KPC Survey Questionnaire

XYZ Project
KPC Survey Questionnaire

1. RECORD INTERVIEW DATE

DAY		MONTH		YEAR	

2. How old are you? RECORD AGE OF RESPONDENT IN YEARS: ___ ___

3. How many children living in this household are under age five? _____

4. How many of those children are your biological children? _____

5. READ ONE OF THE FOLLOWING QUESTIONS BASED UPON MOTHER'S RESPONSE TO Q.4:

   ONLY 1 CHILD UNDER FIVE: "What is the name, sex, and date of birth of that child?"
   MORE THAN 1 CHILD UNDER FIVE: "What are the names, sexes, and dates of birth of your two youngest children?"

	NAME	SEX	DATE OF BIRTH
1		1. MALE 2. FEMALE	__ __ /__ __ / __ __ DD MM YY
2		1. MALE 2. FEMALE	__ __ /__ __ / __ __ DD MM YY

ALL SUBSEQUENT QUESTIONS PERTAIN TO THE YOUNGEST CHILD UNDER 2

6. Before you gave birth to (NAME) did you receive an injection in the arm to prevent the baby from getting tetanus, that is, convulsions after birth?

   1. YES
   2. NO → **SKIP TO Q.8**
   8. DON'T KNOW → **SKIP TO Q.8**

7. How many times did you receive such an injection?

   1. ONCE
   2. TWICE
   3. MORE THAN TWO TIMES
   8. DON'T KNOW

8. Now I would like to ask you about the time when you gave birth to (NAME). Who assisted you with (NAME'S) delivery?

   A. DOCTOR
   B. NURSE/MIDWIFE
   C. AUXILIARY MIDWIFE
   D. TRADITIONAL BIRTH ATTENDANT _____
      (NAME)
   E. COMMUNITY HEALTH WORKER
   F. FAMILY MEMBER _____
      (SPECIFY RELATIONSHIP TO RESPONDENT)
   G. OTHER _____
      (SPECIFY)
   Y. NO ONE

9. Do you have a card where (NAME'S) vaccinations are written down?
   IF 'YES,' ASK 'May I see it please?'

   1. YES, SEEN BY INTERVIEWER
   2. NOT AVAILABLE (lost/misplaced, not in home)→**SKIP TO Q.11**
   3. NEVER HAD A CARD→**SKIP TO Q.11**
   8. DON'T KNOW→**SKIP TO Q.11**

10. RECORD INFORMATION EXACTLY AS IT APPEARS ON (NAME'S) VACCINATION CARD.

	DAY		MONTH		YEAR	
BCG						
POLIO 0						
POLIO 1						
POLIO 2						
POLIO 3						
DPT 1						
DPT 2						
DPT 3						
MEASLES						

11. Sometimes children get sick and need to receive care or treatment for illnesses. What are the signs of illness that would indicate your child needs treatment? *DO NOT PROMPT. CIRCLE ALL MENTIONED.*

A. DON'T KNOW
B. LOOKS UNWELL OR NOT PLAYING NORMALLY
C. NOT EATING OR DRINKING
D. LETHARGIC OR DIFFICULT TO WAKE
E. HIGH FEVER
F. FAST OR DIFFICULT BREATHING
G. VOMITS EVERYTHING
H. CONVULSIONS
I. OTHER _____
(SPECIFY)
J. OTHER _____
(SPECIFY)
K. OTHER _____
(SPECIFY)

12. Did (NAME) experience any of the following in the past two weeks?
READ CHOICES ALOUD AND CIRCLE ALL MENTIONED BY RESPONDENT.

A. DIARRHEA
B. BLOOD IN STOOL
C. COUGH
D. DIFFICULT BREATHING
E. FAST BREATHING/SHORT, QUICK BREATHS
F. FEVER
G. MALARIA
H. CONVULSIONS
I. OTHER _____
(SPECIFY)
J. OTHER _____
(SPECIFY)
K. NONE OF THE ABOVE→ **SKIP TO Q.15**

13. "When (NAME) was sick, was he/she offered less than usual to drink, about the same amount, or more than usual to drink?"

1. LESS THAN USUAL
2. SAME AMOUNT
3. MORE THAN USUAL

14. When (NAME) was sick, was he/she offered less than usual to eat, about the same amount, or more than usual to eat?

1. LESS THAN USUAL
2. SAME AMOUNT
3. MORE THAN USUAL

15. Have you ever heard of an illness called AIDS?

    1. YES
    2. NO→ **SKIP TO END**

16. What can a person do to avoid getting AIDS or the virus that causes AIDS?
    CIRCLE ALL MENTIONED.

    A. NOTHING
    B. ABSTAIN FROM SEX
    C. USE CONDOMS
    D. LIMIT SEX TO ONE PARTNER/STAY FAITHFUL TO ONE PARTNER
    E. LIMIT NUMBER OF SEXUAL PARTNERS
    F. AVOID SEX WITH PROSTITUTES
    G. AVOID SEX WITH PERSONS WHO HAVE MANY PARTNERS
    H. AVOID INTERCOURSE WITH PERSONS OF THE SAME SEX
    I. AVOID SEX WITH PERSONS WHO INJECT DRUGS INTRAVENOUSLY
    J. AVOID BLOOD TRANSFUSIONS
    K. AVOID INJECTIONS
    L. AVOID KISSING
    M. AVOID MOSQUITO BITES
    N. SEEK PROTECTION FROM TRADITIONAL HEALER
    O. AVOID SHARING RAZORS, BLADES
    W. OTHER_____
    (SPECIFY)
    X. OTHER_____
    (SPECIFY)
    Z. DON'T KNOW

THANK THE MOTHER FOR HER TIME.

HAVE SUPERVISOR CHECK OVER QUESTIONNAIRE

TR 1-73: Who Assisted You with Delivery?

CATEGORY		MARKS	FREQ	%	CUM FREQ	CUM %
A	DOCTOR					
B	NURSE/MIDWIFE					
C	AUXILIARY MIDWIFE					
D	TRAD BIRTH ATTEND					
E	COMM HLTH WORKER					
F	FAMILY MEMBER					
G	NO ONE					
Y	OTHER					
TOTAL NUMBER OF MOTHERS			300			100.0
OVERALL FINDING BASED ON THIS TABULATION:						

Indicator: Percent of children age 0–23 months whose births were attended by skilled health personnel

CATEGORY	MARKS (or calculations)	FREQ	%
Yes (Q.8 = A, B or C)			
No			
	TOTAL NUMBER OF MOTHERS IN DENOMINATOR	300	100.0
OVERALL FINDING BASED ON THIS TABULATION:			

TR 1-74: What Are the Signs of Illness That Would Indicate Your Child Needs Treatment?

CATEGORY		MARKS	FREQ	%	CUM FREQ	CUM %
A	Don't Know					
B	Unwell/Not Play Well					
C	Not eating or drinking					
D	Lethargic/hard to wake					
E	High Fever					
F	Fast/Difficult Breathing					
G	Vomits Everything					
H	Convulsions					
I	Other					
TOTAL NUMBER OF MOTHERS			300			100.0
OVERALL FINDING BASED ON THIS TABULATION:						

Indicator: % of mothers of children 0–23 months who state at least 2 danger signs of childhood illness

CATEGORY	MARKS	FREQ	%
Yes (2 or more of Q.11 B-H)			
No (plus skips)			
TOTAL NUMBER OF MOTHERS IN DENOMINATOR		300	100.0
OVERALL FINDING BASED ON THIS TABULATION:			

TR 1-75: Younger Mothers: Q.8: Who Assisted You with Delivery?

CATEGORY		CHECK MARKS (√)	FREQ	%	CUM FREQ	CUM %
A	DOCTOR					
B	NURSE/MIDWIFE					
C	AUXILIARY MIDWIFE					
D	TRAD BIRTH ATTEND					
E	COMM HLTH WORKER					
F	FAMILY MEMBER					
G	OTHER					
Y	NO ONE					
TOTAL NUMBER OF MOTHERS			300			100.0
OVERALL FINDING BASED ON THIS TABULATION:						

Indicator: Percent of children age 0–23 months of YOUNGER MOTHERS whose births were attended by skilled health personnel

CATEGORY	CHECK MARKS (√)	FREQ	%
Yes (Q.8 = A, B or C)			
No			
TOTAL NUMBER OF YOUNGER MOTHERS IN DENOMINATOR			100.0
OVERALL FINDING BASED ON THIS TABULATION:			

TR 1-76: Older Mothers: Q.8: Who Assisted You with Delivery?

CATEGORY		CHECK MARKS (√)	FREQ	%	CUM FREQ	CUM %
A	DOCTOR					
B	NURSE/MIDWIFE					
C	AUXILIARY MIDWIFE					
D	TRAD BIRTH ATTEND					
E	COMM HLTH WORKER					
F	FAMILY MEMBER					
G	OTHER					
Y	NO ONE					
TOTAL NUMBER OF MOTHERS			300			100.0
OVERALL FINDING BASED ON THIS TABULATION:						

Indicator: % of children 0–23 months of OLDER MOTHERS whose births were attended by skilled health personnel

CATEGORY	CHECK MARKS (√)	FREQ	%
Yes (Q.8 = A, B or C)			
No			
TOTAL NUMBER OF <u>OLDER</u> MOTHERS IN DENOMINATOR			100.0
OVERALL FINDING BASED ON THIS TABULATION:			

TR 1-77: Association Between Mother's Age and Skilled Personnel Attending Births

Indicator: Percent ***of children age 0–23 months of YOUNGER MOTHERS whose births were attended by skilled health personnel***

CATEGORY	CHECK MARKS ( )	FREQ	%
Yes (Q. 8 = A, B or C)			
No			
TOTAL NUMBER OF <u>YOUNGER</u> MOTHERS IN DENOMINATOR			100.0
95% Confidence Interval for indicator in YOUNGER mothers: (% – %)			
OVERALL FINDING BASED ON THIS TABULATION:			

Indicator: Percent of children age 0–23 months of OLDER MOTHERS whose births were attended by skilled health personnel

CATEGORY	CHECK MARKS ( )	FREQ	%
Yes (Q. 8 = A, B or C)			
No			
TOTAL NUMBER OF <u>OLDER</u> MOTHERS IN DENOMINATOR			100.0
95% Confidence Interval for indicator in OLDER mothers: (% - %)			
OVERALL FINDING BASED ON THIS TABULATION:			

TR 1-78: LQAS Hand Tabulation Table for a Supervision Area

Supervision Area: _____ **Supervisor: _____**

		CORRECT = 1				**INCORRECT = 0**						**SKIPPED = S**						**MISSING = X**						
#	Indicator	Correct Response Key	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	Total Correct in SA	**Total Sample Size (all '0's and '1's)**
MCH																							
7	% of mothers of children 0–23 months who received at least 2 TT before youngest child born	Q.7 = 2 or 3																					
8	% of children age 0–23 months whose births were attended by skilled health personnel	Q.8 = A, B, or C																					
HIV/AIDS																							
16	% of mothers of children 0–23 months who cite at least 2 ways of reducing risk of HIV/AIDS	2 or more of Q. 16 = B - I & O																					

TR 1-79: LQAS Summary Tabulation Table: Mothers of Children 0-23 Months

LQAS Module Five
Learning Session 3

#	Indicator	Total Correct in Each SA/Decision Rule						Total Correct in Program	Sample Size						Total Sample Size in Program	**Average Coverage = Total Correct / Sample Size**
		1	2	3	4	5	6		1	2	3	4	5	6		
MCH																
7	% of mothers of children 0–23 months who received at least 2 TT before youngest child born															
8	% of children age 0–23 months whose births were attended by skilled health personnel															
HIV / AIDS																
16	% of mothers of children 0–23 months who cite at least 2 ways of reducing risk of HIV/AIDS															

* To find the "Decision Rule" for each indicator, using the LQAS Table **(TR 1-35),** find the "Sample Size" in the left column. Then for *baseline surveys*: look for the "Average Coverage" across the top and look down the column for the "Decision Rule." Then for *monitoring surveys*: look for the "Annual Coverage Target" across the top and look down the column for the "Decision Rule."

TR 1-80: Planning a Hand Tabulation Workshop

- Identify which indicators will be hand tabulated at the workshop.
- Reach a consensus on how those indicators are defined before the workshop.
- Determine which survey questions pertain to each indicator.
- Create and photocopy tabulation tables for workshop participants.
- Devise clear-cut instructions for workshop participants on how to tabulate indicators by hand.
- Reserve adequate facility for workshop (reliable power source; enough table space to organize and review survey forms and record responses on a tabulation table).
- Obtain all necessary materials such as markers/chalk, pens, and large sheets of white paper/chalkboard.
- Have all completed questionnaires present at the workshop.
- Identify at least one person on the Core Team who will be responsible for documenting the process (e.g., taking notes, videotaping the workshop).

TR 1-81: General Principles for Supervising Data Entry

- Hire or use data entry people who have experience. Assure that they are well trained and invested in the survey process. Motivate them to care about the data quality; for example, involve them in the survey training for Interviewers to the extent possible so they understand how the results will be used and why accuracy is important.

- Catch errors and make corrections early in the process to correct problems for future entry.

- Directly observe the entire entry of the first one or two questionnaires from the first cluster

- Check the entire first cluster of questionnaires immediately after data is entered, before the operator starts on next cluster

- Check 2 or 3 questionnaires from the second cluster

- At the end of the first day, randomly check 20% of the records entered for accuracy.

- Make random spot-checks during the second and third days, with a deliberate 10% check of records at the end of each day.

- If more than 2 or 3 errors are found during the 10% or 20% checks, re-train the operator in the problem areas and check ALL of his/her records. Consider replacing operator if problems persist.

- Provide positive feedback and incentives for error-free data entry.

TR 1-82: Quality Data Entry with Epi-Info

All statistical computer software programs have ways to help maintain good quality data. For example in Epi-Info, there are three programs you can use for Quality Control:

CHECK

Every data file created for data entry on a KPC survey should have a "CHECK" program to go with it. A CHECK program helps to control the keystrokes and limit acceptable data entry to only values that are valid for specific questions. In other words, if question #27 should only have answers of 1, 2, or 3, the CHECK program can be written to reject any other keystrokes. This program also can create jumps between data entry fields, following skip patterns in the questionnaire. Similar limitations can be put on data entered for any question in the questionnaire where this is useful. This will not keep all mistakes from happening, but it cuts down on many careless errors that might otherwise be made.

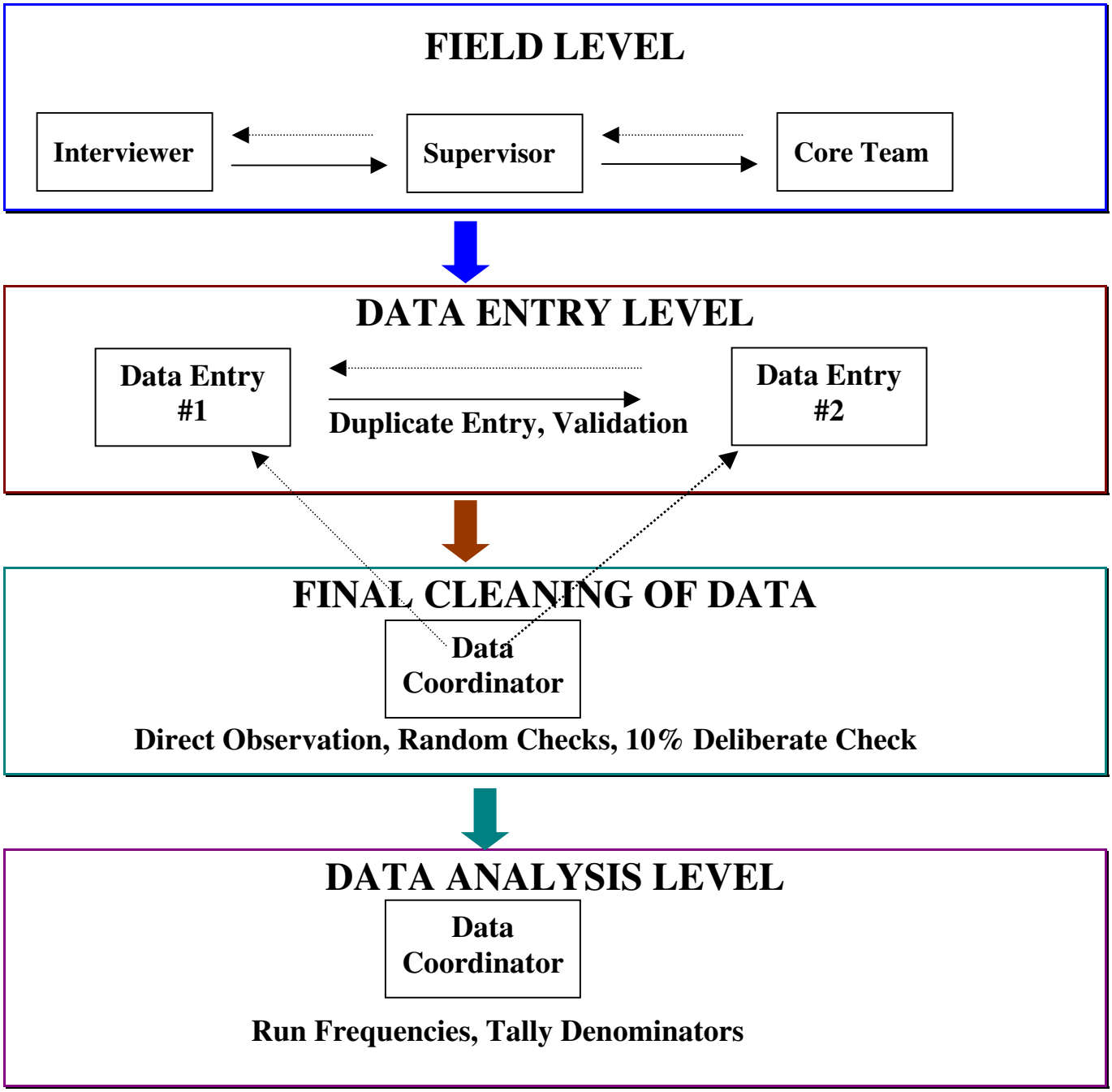
KPC survey questionnaires are created for collecting quantitative data rapidly with pre-determined answer categories, and therefore a CHECK file is ideal for assuring that only these answer categories are possible for data entry as well. Programs that use a spreadsheet like Excel for data entry will likely find more errors in data entry, since they do not have as sophisticated an ability to control the quality of the data that gets entered.

Double-entry of data is an excellent way to maintain high quality data entry. With Epi-Info you have a choice of two programs:

1. **VALIDATE**
   Two separate operators enter data from the same questionnaires into two separate files. The Validate program then allows the files to be compared and any differences displayed so that they can be discussed and reconciled.

2. **ENTER**
   This program is similar to VALIDATE except one operator enters the data into a data set. Then a second operator re-enters and verifies the records in the existing data file. Instead of comparing the two files after all data entry is finished and then going back and correcting one or the other file—as in the VALIDATE method—this method allows real-time correction of data as the second operator repeats entry of the records previously entered. If the new data being entered is different from the original data, an error message appears and the operator cannot continue until the issue is resolved. The operator has the option of keeping the original data (if the second operator made the mistake) or replacing it with correct data (if the first operator made the mistake).

TR 1-83: Levels of Data Quality Control



TR 1-84: Data Analysis Plan

Organization _____ Date _____

Manual or Computer Tabulation:	___ All Manual ___ All Computer ___ Mix of both
If Computer:	What software package will you use? How will you obtain it? Will data be entered daily during field work or at the end? Where will data be entered—in field or home office? Who will enter the data? How many days will it take to enter data? Who will program the software? Who will supervise data entry, cleaning and analysis? Will a double-entry system be used to ensure quality?
Computer Equipment:	How many computers will you need? What computers will you use? What printer will you use? What power source will you use? What alternate power source will you use? Who will help with computer problems? What system for backing up key files will you use?
If Manual:	Who will participate? What indicators will you tally? How many days will you need for the tabulation? What tables will you use? When and where will the tabulation workshop be held?
Analysis Workshop:	How many days will you need? Who will attend: Core Team, Supervisors, Interviewers, MOH, Partners, donor, others? When and where will the analysis workshop be held?

Attach to this plan a complete set of tables for frequencies and cross-tabs that will be produced from the KPC data.

TR 1-85: KPC Survey Supervisor's Role and Responsibilities

The work of the Supervisor is essential to the quality of data collected during the KPC survey. Since the project activities will be based on this data, the Supervisor's work is crucial to the implementation of a high quality project.

- Responsibilities include:
- Takes an active role in motivating and improving the performance of Interviewers.
- Knows how to determine correct cluster locations and cluster boundaries, and to correctly select households in each cluster or interview site.
- Observes (and/or re-interviews, when necessary) at least 10% of the interviews performed for quality and validity.
- Reviews all of the completed interview forms before the Interview Team leaves the community. Supervises the correction of any errors that are detected and, to minimize bias, assures that correct house-to-house technique was used.
- Provides on site assistance to Interviewers regarding all facets of interviewing and anthropometric measurement and answers survey-related questions
- Registers unusual events or situations on the Daily Interview Form.
- Provides remedial training in interviewing and/or anthropometric measurement, when appropriate.
- Knows to whom to address any queries that arise during the survey process.
- Models absolute honesty and integrity in precisely following the survey protocol.
- Maintains confidentiality of information from respondents.

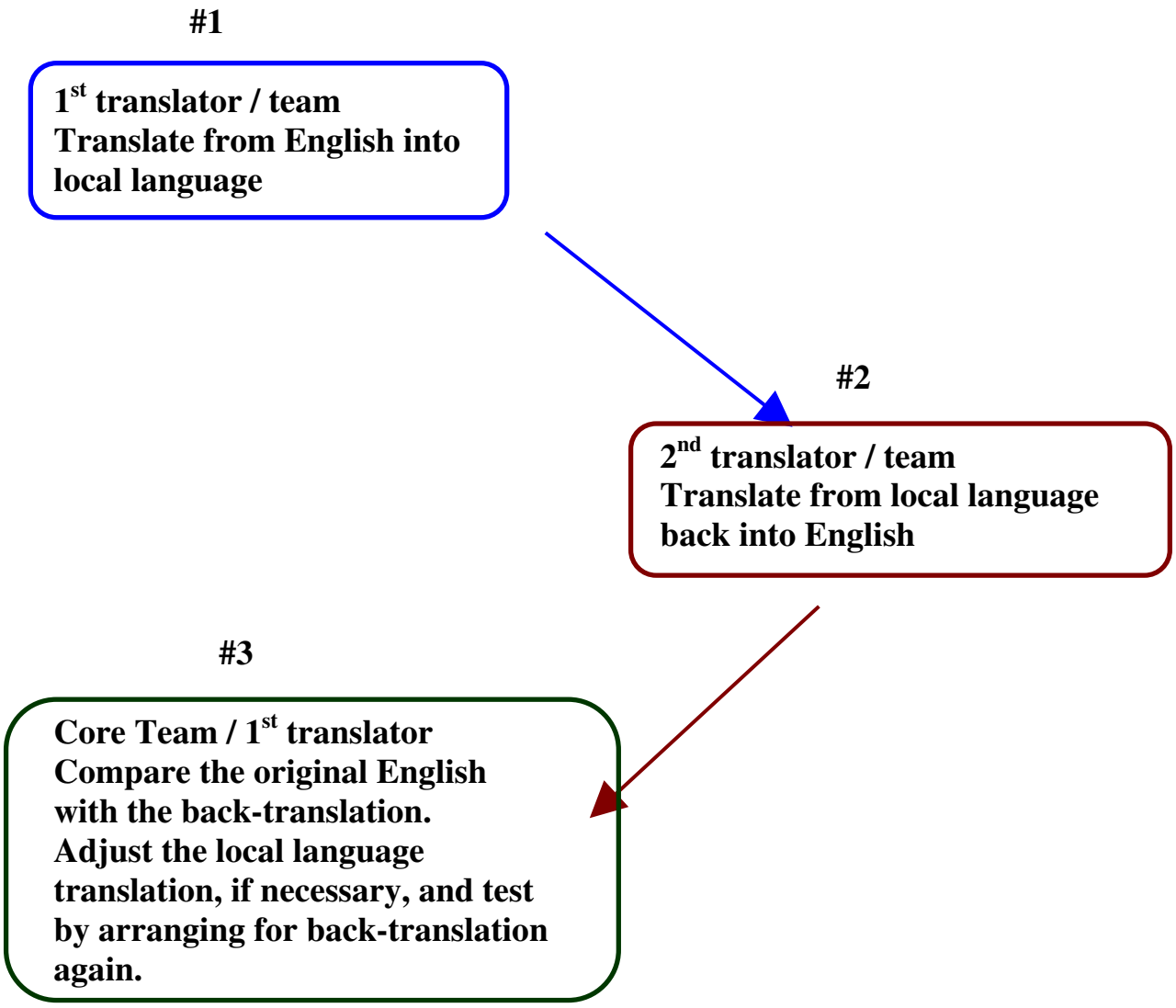
TR 1-86: KPC Survey Interviewer's Role and Responsibilities

The work of the KPC Survey Interviewer directly affects the quality of the data. It is extremely important that the Interviewer: 1) follow the supervisor's directions for selecting "at random" the first household and 2) follow the approved procedure for additional interviews.

The Interviewer:

- Uses correct procedures for randomly selecting a household in the village.
- Uses correct procedures for following the survey definitions like "household" and "migrant."
- Follows the guidelines for identifying who should be interviewed in the household and decides if any of the residents of the household meet the guidelines for selection of a person to survey. If that person is temporarily unavailable, the interviewer follows proper procedures for arranging to interview that person later.
- Knows how to respond in cases where no one in the household meets the survey guidelines for selection—the interviewer is responsible for following correct procedures to identify a new household from which to select a participant that meets the survey guidelines.
- Reminds respondents that participation is voluntary, obtains consent from the respondents to be interviewed, and keeps all responses confidential.
- Builds rapport and remains neutral when asking survey questions (does not react to 'right' or 'wrong' responses in different ways).
- Asks questions with patience and does not lead the respondent to any specific answer.
- Asks questions in a conversational manner. Avoids interrogation method of questioning. Interviewer uses probes when appropriate.
- Rephrases questions using designated local terms and names from the lexicon developed during the training workshop.
- Records responses fully and legibly. Assures that the interview follows the sequences specified after 'yes,' and 'no' responses and makes appropriate "skips."
- Completes questionnaires fully and accurately. Corrects omissions or errors before departing from the community.
- Delivers questionnaire to the Supervisor who checks it immediately for completeness or unclear responses while still in the field.
- Returns to the household if the Supervisor requests clarification on any item on the questionnaire.
- Completes all anthropometric measurements according to protocol and with the highest quality control.

TR 1-87: Translating and Back–Translating the Questionnaire



Some points to remember:

- At a minimum, two separate people or teams must conduct the translation and back-translation, respectively
- Ideally, the back-translator should not have seen the original English version
- If enough personnel are available, it is good to have two translators working together at each step (a minimum of four translators)
- Translators should be encouraged to use simple, local terminology to fit the "lowest common denominator" in terms of the potential education level of respondents
- Members of the Core Team should be involved in approving the final back-translation to assure that the original intent was preserved, checking whether:
  - ✓ the meaning of each question is the same in the local translation as it is in the generic version of the KPC Survey Questionnaire
- Does the KPC Survey Questionnaire reflect both the local language/dialect and the local context? This will be covered further in the discussion about the local lexicon.

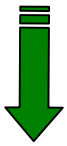
TR 1-88: Events Calendar

APRIL 1998–APRIL 2000
NIMBA COUNTY, LIBERIA

AGE months	EVENTS	MONTH	YEAR
1	Border opening, US Ambassador visit	Mar	2000
2	Libyan Ambassador died	Feb	2000
3	New Year 2000	Jan	2000
4	**Christmas 1999, Coup in Ivory Coast**	**Dec**	**1999**
5	Harvest on President's farm	Nov	1999
6	**President's visit to Ganta, New rice**	**Oct**	**1999**
7	Hunger Time	Sept	1999
8	Plane crash, Lofa attack, Border closure	Aug	1999
9	Nimba 99, July 26th	Jul	1999
10	Poro graduation, Election	Jun	1999
11	Planting taro	May	1999
12	**Easter**	**April**	**1999**
13	Heavy storm in Ganta, Burning	Mar	1999
14	National vaccination campaign	Feb	1999
15	New Year 1999	Jan	1999
16	Christmas 1998	Dec	1998
17	Bloody Diarrhea outbreak, Dokie's death	Nov	1998
18	Yellow Fever campaign	Oct	1998
19	Independence Day	Sept	1998
20	**Flag Day**	**Aug**	**1998**
21	July 26 celebration 1998	Jul	1998
22	Weeding	Jun	1998
23	Planting corn	May	1998
24	**Easter, Burning**	**April**	**1998**

AFTER

BEFORE



Ask the mother, "Was [NAME] born before *[the harvest on the President's Farm]*?" (Use the event that is closest to the child's estimated age.)

If the mother says "yes" or "before," then work your way down the calendar, asking about successive events.

If the mother says "no" or "after," then work your way up the calendar, asking about successive events.

TR 1-89: Tips on Making and Using an Events Calendar

- During the field test of the KPC Survey Questionnaire, use the target group (mothers) in the community to assist in filling in the events calendar with events known to them.

- Be sure to fill key months (6, 12, 24) with clear and identifiable events.

- Use both national and local events.

- Be sure that the month attributed to a certain event is correct.

- Finish compiling the calendar during the Supervisor/Interviewer training (with the participants providing input as they are trained on use of the calendar).

- Remember to make an events calendar for children under 2.

- Remind each Interviewer to carry a copy of the calendar to all interviews.

- Events at the top of the calendar are more recent, so if the child is born AFTER a certain event, work your way up the calendar.

- If the child is born BEFORE a certain event, work your way down the calendar.

TR 1-90: Informed Consent Form

Note to the Interviewer: Introduce yourself to the potential interviewee by saying:

Hello. My name is _____.

I am working with *(NAME OF ORGANIZATION*). We are conducting a survey and would appreciate your participation.

I would like to ask you about your health and the health of your youngest child under the age of two years. This information will help *(NAME OF ORGANIZATION)* to plan health services and to assess whether it is meeting its goal to improve children's health.

The survey usually takes _____ minutes to complete. Whatever information you provide will be kept strictly confidential and will not be shown to other persons.

Participation in this survey is voluntary and you can choose not to answer any individual question or all of the questions. However, we hope that you will participate in this survey since your views are important.

At this time, do you want to ask me anything about the survey?

Are you willing to be interviewed?

- ☐ RESPONDENT **AGREES** TO BE INTERVIEWED
- ☐ RESPONDENT **DOES NOT AGREE** TO BE INTERVIEWED

Signature of Interviewer: _____ **Date:** _____

Name of Respondent: _____

TR 1-91: Sample Agenda for Training Supervisors/Interviewers

Day 1	Learning Session	Time
1	Welcome and Introduction	25 minutes
2	Purpose and Role of the KPC Survey	50 minutes
3	Role of the Core Team, Supervisors and Interviewers	60 minutes
4	Reviewing the KPC Survey Questionnaire	105 minutes
5	Selection of Households and Respondents	90 minutes
	Daily Evaluation	15 minutes
	Total	5 ¾ hours
Day 2		
	Question & Answer (about the previous day's work)	15 minutes
6	Proper Interviewing Techniques	105 minutes
7	Importance of Informed Consent and Confidentiality	30 minutes
8	Using Documentation and the Events Calendar	85 minutes
9	Giving Feedback Using the Quality Improvement Checklist	120 minutes
	Daily Evaluation	15 minutes
	Total	6 hours, 10 minutes
Day 3		
	Question & Answer (about the previous day's work)	15 minutes
10	Measuring Weight	180 minutes (3 hours)
11	Conducting Standardization Testing	3 hours
12	Practicing Interviews	120 minutes
	Daily Evaluation	15 minutes
	Total	8 ½ hours
Day 4		
	Question & Answer (about the previous day's work)	15 minutes
13	Field Test and Revision of the KPC Survey Instruments	6 hours
	Evaluation and Closing	15 minutes
	Total	6 ½ hours
Optional Learning Sessions:		
14	Measuring Height	120 minutes (2 hours)
15	Measuring MUAC	60 min

TR 1-92: KPC 2000+ Field Guide Chapter 2

2. DEVELOP A LOGISTICS PLAN

1. Choosing Survey Dates—Some Things to Consider:

   - Are there holidays during the scheduled dates of the survey?
   - What are weather conditions like at the scheduled time of the survey? If possible, avoid conducting the survey during monsoon season or at other times of the year when there are long periods of bad weather.
   - What is the potential availability of respondents? For example, it might be very hard to conduct interviews with people during harvest season, when they are likely to be away from home for long periods of time.
   - Will there be other project activities taking place at the same time that will create a major scheduling conflict for key persons involved in the survey?

Keep in mind that the time of year when you conduct the survey affects how representative the survey findings will be of conditions in general. Disease prevalence, as well as food security and dietary practices, usually vary throughout the year.

REMEMBER

The KPC survey is a rapid assessment, but your project should plan to spend approximately four (4) weeks engaged in KPC-related activities. Not all of this time will be full-time work. Many projects try to complete the survey in a much shorter period of time. Although a participatory approach takes a little more time, the extra time and effort spent to incorporate local partners/stakeholders, build local capacity, and properly train interviewers will result in high-quality information that is owned and used by all stakeholders. The benefits of this buy-in at the local level will extend far beyond the KPC survey.

2. Develop a budget:

In developing a budget for the survey, it is recommended that you consider all resource requirements.

- Review requirements for the following:

- ⇨ Personnel for conducting training sessions, interviews, tabulation, analysis, report writing and dissemination of results. This includes anticipated expenses in providing food and/or lodging for Supervisors, Interviewers, and other field personnel.
- ⇨ Supplies for copying questionnaires and hand-tabulation tables, training of supervisors and interviewers, conducting the survey, collecting anthropometric data (purchasing or borrowing scales and measuring boards), tabulation, analysis, production of reports and presentation of results.
- ⇨ Transportation for field-based practice, data collection, and feedback sessions (local and national).

- ♦ Develop a budget for survey costs (salaries, per diems, equipment, supplies, and room and board for project personnel and Interviewers, rental of equipment and facilities, etc.).

For a permanent record of expenses that can be used when budgeting for future surveys, include the actual cost breakdown as an appendix in the KPC survey report.

3. Select personnel to support all phases of the survey:

- ♦ The number of Interviewers, Supervisors and days required to complete the survey will vary according to factors such as resources, weather conditions, and number of interviews. It might be useful to train extra staff in case of illness or some other emergency. Considerations include the availability of personnel and transport as well as travel factors. It is also important to consider the trade-offs between the number of Interviewers, the length of data collection, and the quality of data. Having a small number of Interviewers (and therefore, fewer survey teams) would increase the amount of time needed to complete all of the interviews, but this might increase the internal consistency of the information collected. Increasing the number of people involved in data collection can promote greater ownership of the KPC process, results, and the project as a whole. Although a larger number of Interviewers might also reduce the amount of time spent in the field, there is a possibility that there will be greater variation (i.e., less consistency) in the quality of interviews conducted.

4. Determine a Transportation Plan:

Transportation should be provided to each surveyed area (cluster or lot), and possibly within surveyed areas. Drop-offs and pick-ups will need to be scheduled in advance. In urban or peri-urban areas, where families tend to reside more closely and within a smaller geographic area, transportation may not be an issue. The KPC Core Team will decide whether special plans must be made to transport Interviewer Teams.

- ♦ If resources permit, it is recommended that each survey team have one available vehicle and a minimum of one vehicle per Supervisor. Staff may share vehicles, take taxis or motorbikes, or use bicycles.
- ♦ Calculate the number of vehicles needed (to and within the project area). Teams in adjacent survey sites may share resources, vehicles, and supervisors.

- Map the survey sites to determine location and time/distance factors in getting to clusters. It is helpful to indicate important landmarks such as roads, schools, and churches, temples, or mosques on each map. Consider the map when determining the number and kinds of transport or vehicles needed.
- Calculate budget for fuel, maintenance, and drivers. Hire drivers who are familiar with the layout of the project area. Drivers can also serve other roles during the survey such as Interviewers or guides, if necessary.
- Depending on travel factors, determine the minimum number of teams needed and the time required of Supervisors and Interviewers. If possible, arrange for the survey to be conducted in about three (3) days.

> When creating Interview Teams, remember that there are fewer Supervisors than Interviewers. To ensure high-quality data collection, each Supervisor needs to be able to assist and monitor all Interviewers on his or her team. A team of 3 to 5 persons (1 Supervisor and 2 to 4 Interviewers) is manageable.

5. Develop Plan for Editing, Printing, and Copying/Reproducing:

- Plan to reproduce the following:
  - Survey questionnaires (to be used during training and actual field implementation of the survey)
  - Other training materials
  - Additional field documents such as maps of survey sites, or a quick reference sheet summarizing household and respondent selection protocols for interviewers
  - Tabulation tables
  - Charts/graphs for presentations
  - Survey report
  - Other materials that will be developed to disseminate results to the community and relevant agencies/individuals
- Determine available resources for editing, printing, and reproducing the survey questionnaire and other materials. This determination includes available power sources, computer hardware, software, qualified personnel, reproducing machines, and stores of paper, etc.
- Have a plan for developing and copying these necessary documents, including the following:
  - WHO will develop and copy the documents?
  - WHERE can documents be developed and copied?
  - WHEN can documents be developed and copied?

6. Develop a Plan for Tabulation/Analysis:

- Decide how the KPC Survey Questionnaires will be tabulated (manually and/or by computer), and plan personnel schedule and training accordingly.
- Identify all relevant parties that can be involved in hand tabulating the data.
- Assess the project's capacity for computerized data tabulation.
- Determine resources—computers, printers, software, power sources, and availability of trained computer personnel.

7. Develop a Plan for Dissemination and Data Utilization:

- When?
- Where?
- With whom?
- How?

8. Other Administrative and Logistical Issues:

In some countries, projects have to receive special permission from the government to conduct the survey. Therefore, communicate with the proper officials early in the planning process to avoid future delays in the survey activities and/or negative responses to survey findings.

- Identify, reserve, and confirm facilities for training, tabulation, and feedback sessions.
- Contact agencies/organizations with Child Survival, maternal health, or other relevant projects, and invite them to participate.
- Schedule a briefing with the USAID mission and all other interested agencies (e.g., MOH) before the initial training activity.
- Schedule a debriefing (feedback session) and a review of findings with all interested parties as soon as possible after the survey.
- Obtain permission from the appropriate administrative officials to conduct household interviews during the field test and the actual survey.
- Purchase or borrow necessary supplies and equipment for facilitating the training, conducting the survey, and tabulating, analyzing, and presenting the findings.

TR 1-93: KPC Logistics and Management Planning Form

Choose survey dates. Mark on the form below the months in which other events might make it difficult to conduct the survey. Then choose the times that are least problematic.

Scheduling issues to consider	Months of the Year (Western Calendar)											
	J	F	M	A		J	J	A		O	N	D
Holidays (Tet, Christmas, Ramadan, etc.)												
Bad weather (monsoon, very hot weather)												
Times when respondents are less available (harvest / planting season, migration)												
Other project activities or scheduling conflicts for key persons? (Staff retreats for example)												
Disease prevalence patterns												
Food security and eating patterns (Hungry season)												
Other issues												

Survey Dates The survey will be conducted over approximately 28 days beginning on _____ and ending on _____ .

Note: Refer to **TR 1-8**: **General Timeline for Conducting a KPC Survey** that presents activities for 28 days.

Enter your dates in calendar format and begin charting major activities.

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday

Mark dates for:

V = vehicles needed
CT = Core Team
S = Supervisors
I = Interviewers

Include dates for:

Field Testing
Training of Core Team, Supervisors, Interviewers and Post-Survey Team
Data Collection
Data Entry
Analysis Workshop

Personnel recruitment plan (drivers, data entry personnel and other support people will be included in other sections).			
Task:	**Survey Trainer Consultant**	**Supervisors**	**Interviewers**
How many?			
Who will recruit them? (Add to Action Plan)			
When will they be needed? (Calendar)			
From where will you recruit them? (Your PVO, Partners, MOH, Universities or research institutions?			
Lodging arrangements			
Food arrangements			

Data Collection: If possible, arrange for the data collection phase to be conducted over 2 to 5 days. To achieve this, you need to identify enough people to form Survey Teams that can complete the 30-cluster survey within 2 to 5 days if you are using cluster sampling. In order to know how many person-days are needed to complete the data collection phase, determine the anticipated average length of the interview and the average walking distance between homes. Use this information to estimate the number of person-hours it will take to complete one cluster, and then extrapolate this information to determine how many person-hours it will take to complete the entire survey.

For example, if the survey takes 30 minutes to administer, and if walking time is about ten minutes between households with children under 2 years of age in a given cluster, then one can expect an entire cluster of ten households to take ((30 minutes x 10 households) + (10 minutes x 9 households)) = 300 + 90 = 390 minutes / 60 = 6.5 person-hours. Therefore, with two people working the cluster, the cluster can be completed in 3.25 hours, or easily in one morning.

This is the usual pattern in areas where population dispersion is not very high, communities are within one hour or less travel time, and the interview time is close to 30 minutes: two Interviewers and one Supervisor can do one cluster in the morning and one cluster in the afternoon.

The number of teams needed depends in part on the terrain of the project area and the availability of transport during the survey. With a sample size of 300, if one team can complete ten interviews in each of two clusters per day, then five teams can complete the survey in three days. If each team can complete only one cluster per day, then the (n=300) survey will take six days.

Transportation Plan				
Task:	**Vehicles**	**Drivers**	**Fuel & Maintenance**	**Maps of survey sites**
What kinds / how many / how much?				
When will you need them? (Calendar) (Include visits to villages to conduct mapping and brief community)				
Who will get these?				
From where will you obtain them? (PVO, Partner, MOH, Private hire)			Where will you buy fuel? Who will maintain vehicles?	
Other comments:				

Editing / Printing / Copying / Survey Forms and Other Materials.

Estimation Matrix for Document Copying Needs			
Document	**A: Number of (1-sided) pages per document**	**of each documents needed**	**Total number of copies to be made (A x B)**
Surveys (for training and field use)			
Other training materials			
Field documents (maps or quick reference sheets)			
Tabulation tables			
Charts/graphs for presentations			
KPC Quality Checklists			
KPC Survey report			
Other materials to disseminate results to the community and other stakeholders			
		Total of copies to be made:	

A 45-question *KPC Survey Questionnaire* is about ten pages long. You need an additional 10% (in case one questionnaire in ten needs to be recopied). In addition, there are 5 questionnaires per person for the KPC Survey training (for the practice sessions). Assuming a sample size of 300 and that 20 people are trained, you need to make: (10 pages x 300 x 1.10) + (10 x 5 x 20) = 4,300 photocopy pages (2,150 sheets if copied double-sided).

For manual tabulation tables, you need about 100 pages for a full set. An additional set of tables should be kept as a record for future surveys. Some tables will also be needed in training activities (approximately 20%). Therefore: 100 x 2.2 = 220 copied sheets.

The *survey report* will probably be approximately 60 pages x 10 copies per feedback session x 2 feedback sessions + 10 extra photocopies of the report = (60 x 10 x 2) + (60 x 10) = 1,800 photocopied pages.

Total *photocopies* needed = 6,320. Typically, an office photocopy machine cannot usually handle this volume of photocopies and other arrangements may be necessary.

Lesson learned: Use a professional photocopy facility and contact and be prepared to use a backup facility in case of problems. Let the professional facility know your schedule and your photocopy needs in advance in case they need to purchase toner, etc.

Plan for Editing, Printing, and Copying Documents				
Task	**Who is responsible for this? ***	**How many/how much?**	**When? (Calendar)**	**Where?**
Use computer software to edit the questionnaire file				
Locate good quality printer				
Identify a qualified person to do the editing				
Contact a professional photocopy facility and a back-up facility				Primary facility Back-up facility
Make copies of the questionnaire for the pre-test & training				
Make copies of the other materials for the pre-test and the training				
Translate the questionnaire				
Make copies of the modified questionnaire shortly before the survey				
Other comments:				

* Add to Action Plan

Tabulation and Analysis of Data.

Plan for Computerized Tabulation of the Survey				
Task	**Who is responsible for this? ***	**How many/how much?**	**When? (Dates)**	
Obtain computers, printers, paper, ink and database software				
Identify trained computer personnel for data entry				
Identify personnel for supervising data entry, cleaning data and maintenance of computers				
Ensure alternative power sources if power is not reliable				
Other comments:				

* Add to Action Plan

Personnel Budget (Refer to the forms previously filled out for data)						
Type	**Number of persons**	**of days**	**Daily salary**	**Daily food/per diem cost**	**Daily lodging cost**	**Total cost***
Supervisors						
Interviewers						
Core Team members						
KPC Survey Trainer Consultant						
Drivers						
Document preparation and copying support person(s)						
Data entry and computer maintenance personnel (if needed)						
Sub-total for personnel						

* Total Cost = (Number of Persons) x (Number of Days) x [(Daily Salary) + (Daily food/per diem) + (Daily Lodging)

Transportation Budget (Refer to the forms previously filled out for data)				
Item				
Type of vehicle	**vehicles**	**Quantity**		**Total cost**
		"Days"		
Diesel Fuel/ Petrol		Litres/gallons		
Maintenance (estimated labor and spare parts for vehicle maintenance and minor repairs needed to keep the survey on schedule)				
Subtotal for transportation				

Budget for Various Services and Equipment (Refer to the forms previously filled out for data)			
Service/Item		**Cost per unit**	**Total Cost**
Equipment: Computers, printers, generators, software, etc.			
Translation			
Document copying			
Rental of office and meeting space			
Food costs during workshops			
Subtotal			

Summary of Estimated Budget	
Budget Category	**Subtotal**
Personnel	
Transportation	
Various Services and Equipment	
Estimated Grand Total:	

TR 1-94: To Calculate Sample Size, You Will Need to Know…

z = the Z-value from a table for the level of confidence you want

z is a constant value from a normal distribution table. When assigning the value of *z*, most studies assume a 95% confidence level. A 95% confidence level means that there is a 95% chance that you captured the true rate in the population within the range of values defined by the confidence limits of your survey's estimate. (The corresponding *z* value for a 95% confidence level is 1.96.) Other *z* values can be found in the following table:

80%		90%		**95%**		98%		
1.282		1.645		**1.960**		2.326		2.576

p = the approximate proportion you expect to find in the population

Usually the value of *p* is not known, in which case you should be conservative and choose $p = 0.5$. This gives you the largest possible sample size for your study.

q = 1 – p

d = the level of precision you can tolerate (plus or minus 5%, etc.)

The value of *d* depends on your desired level of precision and should be chosen according to the objectives and needs of the survey. A precision of 10% ($d = 0.1$) is widely used and is acceptable if your project seeks information for project management purposes. That means if your resulting estimate is 45%, you can expect your confidence interval to range from 35% to 55%. You can see, therefore, that a precision of ± 5% ($d = 0.05$) is better, but requires a larger sample size.

TR 1-95: Calculating the Size of a Simple Random Sample

Formula:

$$n = z^2(pq)/d^2$$

where:

n = sample size

z = statistical certainty or level of confidence chosen

p = estimated level/coverage to be investigated

q = 1 – p

d = precision desired

TR 1-96: Calculating the Size of a Cluster Sample

Formula:

$$n = (z^2(pq)/d^2) \underline{\times d.e.}$$

where d.e. = design effect

TR 1-97: What Happens to "n" If . . .

Formula:
$n = (z^2(pq)/d^2)$ x d.e.

1. **If we know from MOH statistics that approximately 50% of women receive prenatal care, how many women must you survey, with a precision of 10% and a confidence level of 95% in a Simple Random Sampling Survey?**

2. **What happens to "n" if:**

   a. **The proportion of the factor in the population is less than 50%? (Example use 30%).**

   b. **You want a tighter precision (like +/– 2% instead of 10%)?**

   c. **You use cluster sampling instead of SRS?**

   d. **You want to be very, very sure of your estimate, for example 99% confident.**

TR 1-98: (Optional) Homework on Sample Size: One Proportion

Exercise #1

You know from a recent MICS that the prevalence of diarrhea in a similar, nearby population is 21% among preschool children. You need to survey your own target population and you feel that this is a good estimate of the diarrhea in your own area.

How many children 0–23months must you survey, if you want to use a SRS, with a precision of 2%, and a confidence level of 95%? _____

Exercise #2

You do not know what proportion of mothers in your area know two ways to prevent HIV/AIDS. (Hint: If you do not know the proportion, be conservative and use 50%.)

How many mothers of children 0–23 months must you survey, if you want to use cluster sampling with a precision of 5%, and a confidence level of 95%?

What would the sample size be for the same situation with a precision of 10%?

Exercise #3

You are doing a reproductive health study. You want to measure the proportion of mothers who received at least two tetanus toxoid injections before the birth of the youngest child less than 24 months of age. However, you do not know what proportion of mothers in your area have TT2 vaccine. You do know, however, that mothers living in a similar area that has had the same type of vaccine services were recently found to have a coverage rate of 10%.

You will *also* be measuring the proportion of women whose deliveries were attended by skilled health personnel in the project area in your study. You do not have a good estimate of who attends most births.

How many women must you include in your sample, if you want to use LQAS sampling with a precision of 5%, and a confidence level of 95%? _____