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How Effective are Health Systems Strengthening Programs in Reaching the Poor? A Rapid Assessments Approach

March 2006

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- ▲ *Delivery of quality services by health workers.*
- ▲ *Availability and appropriate use of health commodities.*

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Abstract

Over the past two decades, a number of countries have adopted health reform policies to improve the performance and effectiveness of the health sector including ensuring access to care for the poor. To identify the types of interventions that work, it is important to evaluate the interventions quickly by using relatively simple methodological approaches. The purpose of this paper is to provide an overview of the rapid assessment methods used in the evaluation of poverty alleviation activities and health and development programs. Based on a literature review, the study proposes a simple methodology that can be used to identify methods that can be used to rapidly assess the effect of health policy changes on the health service utilization and health status of the poor. By using the methods proposed, evaluators should be able to evaluate health programs and their impact on the health of the poor within a short period of time.

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Acronyms

AIM	<i>Amanah Ikhtiar Malasia</i>
BRAC	Bangladesh Rural Advancement Committee
CATCH	Core Assessment Tool on Child Health
CGAP	Consultative Group to Assist the Poor
COPPADES	Committee for the Promotion of Public Awareness and Development Studies
DHS	Demographic and Health Survey
ICDDR,B	International Center for Diarrhoeal Disease Research, Bangladesh
IFPRI	International Food Policy Research Institute
KMBI	<i>Kalibalikat par sa Maunlad na Buhay</i> (NGO)
KPC	Knowledge, Practice and Coverage
MICS	Multiple Indicator Cluster Surveys
NGO	Non-governmental Organization
PCA	Principal Component Analysis
SLC	School Leaving Certificate
UNICEF	United Nations Children’s Fund
USAID	United States Agency for International Development
WHO	World Health Organization

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Executive Summary

Despite rapid improvements in health technology and knowledge, developing countries are finding it difficult to achieve the rate of progress in health necessary to achieve global health targets. One reason for this slow progress is the failure of the health system to reach the poor. Infant and child mortality among poor households remains significantly higher than among non-poor households. In order to improve health indicators of a country within a short period of time, it is important to design a pro-poor health care delivery system so that health concerns of the poor can be addressed more effectively. Reaching the poor is also important for achieving a higher degree of equity and social justice.

Over the past two decades, a number of countries have adopted health reform policies to improve the performance and effectiveness of the health sector including ensuring access to care for the poor. Although health reform experiments have been going on for a long period of time, little is known about the effectiveness of alternative options on the health status of the poor. To identify the types of interventions that work, it is important to evaluate the interventions quickly by using relatively simple methodological approaches. Usually, a scientifically rigorous evaluation of health programs or interventions requires a significant amount of resources and time. The long time lag between the initiation of an evaluation and the presentation of results makes major policy changes quite difficult to adopt. In fact, in traditional program or project evaluations, by the time the policymakers become aware about the poor performance of the interventions, a significant amount of resources have already been used up and wasted. Therefore, it is important to develop methods to estimate the effect of reform initiatives within a short period of time. If the interventions can be evaluated within a short time frame, policymakers can take corrective measures or fine tune the system to ensure effective use of scarce health resources. Although many of the health effects are observable in the long run, a number of intermediate outcomes or processes must improve in the short run to produce the longer run final outcomes. Rapid evaluation techniques rely on these short-run indicators to understand the potential effects of the program in the longer run. Moreover, the rapid assessment can also indicate if the reform policies are being implemented in the appropriate manner and whether the implementation of the policy changes are showing any impact on health service utilization, health status of the population, etc.

The purpose of this paper is to provide an overview of the rapid assessment methods used in the evaluation of poverty alleviation activities and health and development programs. The principal objective is to identify methods that can be used to rapidly assess the effect of health policy changes on the health service utilization and health status of the poor. Therefore, we need to develop rapid measurement of two different aspects: the degree of poverty and the degree to which the health services and interventions are reaching the poor. To understand if the health policy changes are reaching the poor, we need to define poverty using low-cost data collection procedures. The second aspect will be to identify the health sector indicators which are likely to be very sensitive in the short-run. If the health sector is successful in reaching the poor, these short-run indicators will reflect the changes within a short period of time.

To illustrate the alternative approaches of measuring poverty or health or both, we use Demographic and Health Survey (DHS) data from Ghana. Incorporating the application component

with the review of literature should be useful for a better understanding of practical application of the methodology and potential problems a researcher might face in using the methodologies described in the literature. These data can also indicate how well different measures of poverty and health worked in the context of a poor developing country.

This review presents an overview of rapid methods for identifying the poor and assessing the effects of health reform activities and interventions on the health status of the poorest sections of the population. The term “rapid assessment” has been used here in a relative sense, to indicate the methodological approaches that can provide relatively accurate and appropriate information to the policymakers within a short period of time. How short the time frame should be depends on the nature and size of the interventions to be evaluated. Some interventions or changes may not show significant health effects within a year (i.e., buying an x-ray machine for a health center) while other interventions may show positive outcomes within a month (i.e., vaccination of infants, use of oral salt for the control of diarrheal diseases). Once the minimum time is allowed for the operation of the project, rapid assessments need to provide relevant information to policymakers in the short run, preferably within three to four months after the initiation of the assessment study.

Because the objective is to identify the effects of health reform activities on the health status of the poor, the rapid assessment needs to incorporate information both on poverty status of households and health effects of interventions. This review examined a number of approaches used in the literature to categorize households by economic status. Asset ownership and some living condition indicators appear to be quite sensitive in identifying the poor and non-poor households. Based on these indicators and the questionnaires currently being used, the report proposes a short questionnaire that can be used in poor developing countries. The questionnaire includes questions on educational status of the head of the household, housing conditions, employment status, whether the household hires any help, whether the members work outside, ownership of various assets and food security. Two asset types from low-value, medium-value, and high-value assets are included in the questionnaire so that it will be easier to discriminate among the households in terms of their economic situation. Because the questionnaire is about one page long, the time needed to collect the data should not be more than 15 minutes per household.

Once the data are collected, the next step would be to categorize households by socioeconomic status so that poverty rankings can be identified. There are many different ways the information on household economic status can be summarized. Because the wealth scores based on principal component analysis (PCA) are widely used in the literature, it is suggested that the indicators from the questionnaire be combined using the same PCA approach.

For rapid assessment of health effects, another questionnaire is proposed. The problem with rapid assessment of health is that many of the final desired outcomes can not be observed within a short period of time and therefore, it is important to identify either the relatively more sensitive health measures or the intermediate processes or outcomes. The literature review suggests that a number of nutritional status measures are quite sensitive to the economic position of households and access to quality health care services. Height-for-age and weight-for-age scores for children are quite sensitive to socioeconomic status and both these measures can be used in a rapid assessment.

Unmet service demand for various types of health conditions is another set of indicators that can be used in rapid assessment. For some illnesses and symptoms, children should be seen by health professionals and these conditions are incorporated in the questionnaire to understand the prevalence of these illnesses and the degree of unmet demand by socioeconomic groups. Higher unmet demand among the poor indicates the failure of the health system in reaching the poor. Child mortality and

maternal health are also quite sensitive to the availability of health services and socioeconomic status of households.

Combining the two proposed questionnaires, evaluators should be able to evaluate health programs and their impact on the health of the poor within a short period of time. The questionnaires should not take more than half an hour to implement. Although the questionnaire should work well in rapid assessments, further research is needed to validate the method as a rapid assessment of health reform activities on health status of the poor.

1. Introduction

Despite rapid improvements in health technology and knowledge, developing countries are finding it difficult to achieve the rate of progress in health necessary to achieve global health targets. One of the reasons for this slow progress is the failure of the health system to reach the poor. Infant and child mortality rates among poor households remain significantly higher than among non-poor households. In order to improve the health indicators of a country within a short period of time, it is important to design pro-poor health care delivery system so that the health concerns of the poor can be addressed more effectively. Reaching the poor is also important for achieving a higher degree of equity and social justice.

Another important reason for targeting the poor is related to the overall poverty alleviation strategies of developing countries of the world. One classic study conducted in the City of York in 1899 (Rowntree 1922) found that a significant proportion of households in extreme poverty had become poor due to the poor health status of household members (especially the earning members). Therefore, a health system that targets the poor not only improves the health status of poorer sections of the community, it can actually protect the households from sliding down into abject poverty. Improvements in health will also help poor households to become more productive and higher worker productivity reduces the vulnerability of households to poverty. Therefore, provision of health care services or improvements in the quality of care provided to the poor or near-poor should be considered important in poverty alleviation programs of the developing world (Organization for Economic Cooperation and Development [OECD] and World Health Organization [WHO] 2003). Health reform efforts in many developing countries are now focusing on improving the provision of health care services, especially the types of services likely to be more effective in improving health of the poor.

Improvements in the health of the population affect the long-run economic position of households as well. Better health status of children implies higher school enrollment, better school performance, and lower school dropout rates. The lifetime earning capacity of a more educated workforce is better than that of an illiterate population. Therefore, improvements in health lead to higher educational status of children and better educational attainment will lead to higher income, better health and nutrition, and a higher degree of specialization in the market place (World Bank 1993).

Over the past two decades, a number of countries have adopted health reform policies to improve the performance and effectiveness of the health sector including ensuring access to care for the poor. Although the health reform experiments have been going on for a long period of time, little is known about the effectiveness of alternative options on health status of the poor. To identify the types of interventions that work, it is important to evaluate the interventions quickly by using relatively simple methodological approaches. Usually, a scientifically rigorous evaluation of health programs or interventions requires a significant amount of resources and time. The long time lag between the initiation of an evaluation and presentation of results makes major policy changes quite difficult to adopt. In fact, in traditional program or project evaluations, by the time the policymakers become aware about the poor performance of the interventions, a significant amount of resources have already been used up and wasted. Therefore, it is important to develop methods to estimate the effect of

reform activities within a short period of time. If the interventions can be evaluated within a short period, policymakers can adopt corrective measures or fine-tune the system to ensure effective use of scarce health resources. Although many of the health effects are observable in the long run, a number of intermediate outcomes or processes must improve in the short run to produce the longer-run final outcomes. Rapid evaluation techniques rely on these short-run indicators to understand the potential effects of the program in the longer run. Moreover, the rapid assessment can also indicate if the reform policies are being implemented in the appropriate manner and whether the implementation of the policy changes are showing any impact on health service utilization, health status of the population, etc.

The purpose of this paper is to provide an overview of the rapid assessment methods used in the evaluation of poverty alleviation activities and health and development programs. The principal objective is to indicate the rapid assessment of the effect of health policy changes on the health service utilization and health status of the poor. Therefore, we need to develop rapid measurement of two different aspects: the degree of poverty and the degree to which the health services and interventions reached the poor. To understand if the health policy changes are reaching the poor, we need to define poverty using low-cost data collection procedures. The second aspect will be to identify the health sector indicators which are likely to be very sensitive in the short run. If the health sector is successful in reaching the poor, these short-run indicators will reflect the changes within a short period of time.

To illustrate the alternative approaches of measuring poverty or health or both, we have used Demographic and Health Survey (DHS) data from Ghana. Incorporating this application component with the review of literature should be useful for a better understanding of practical application of the methodology and potential problems a researcher might face in using the methodologies described in the literature. The data set can also indicate how well different measures of poverty and health worked in the context of a poor developing country.

The structure of the report is as follows. Section 2 lists the specific objectives of this review. Although the rapid assessment of health intervention is the principal objective, not all types of health sector reforms can be evaluated using a limited set of rapid assessment techniques. To focus the study on the evaluation of specific types of health sector reforms, Section 3 discusses the types of reforms that might find it useful to adopt the proposed approach of evaluation. Section 4 describes the steps followed to analyze rapid assessment methodologies for evaluating the effect of health sector reform activities on the poor. Section 5 reviews the methodologies of identifying the poor in a geographic area. The focus is to identify the “rapid assessment” techniques although there is no formal definition of “rapid assessment” that can be used to identify the validity of the approach or degree of “rapidness”. In general, rapid assessment techniques have two basic properties: the assessment can be carried out using relatively simple questionnaires, preferably no more than two pages long, and the sampling procedure should be straightforward and sample size relatively small so that a quick low-cost survey is feasible. Note that it is not a definition that clearly demarcates rapid assessment techniques from others, but rather it defines it in a relative sense. Therefore, the distinction between rapid and non-rapid assessments is context specific. Like any other health sector assessments, rapid assessment should also be sensitive, specific, and valid in the measurements of health and poverty.

2. Objectives of the Research and Importance of Health Sector Reform Assessment

The objective of the research is to identify rapid assessment methodologies that can be used to assess the effect of different types of health reform programs on access to health care, utilization of health services, and health status of the poor. In other words, this study will try to identify methodologies which can determine, in quantitative terms, the extent to which the health sector reform policies benefited the poor within a relatively short period of time. The method should also be low cost so that the assessments can be repeated once or twice a year to monitor the progress of the indicators or to identify the potential problems in the process of implementation of reform policies.

More specifically, the objectives of the study are as follows:

1. Identifying quick and practical indicators for measuring poverty through a literature survey. The emphasis will be on the identification of broad economic categories, including the poor.
2. Identifying health indicators which are easy to collect, relatively low cost, and sensitive in the short run, especially for the poor households.
3. Proposing different field survey techniques for the implementation of data collection procedure and the analysis of the data.
4. Relating the different aspects of health sector reform policies with the short-run outcome measures to estimate the degree to which the health programs could reach the poor households.

The study findings will be useful to policymakers and health sector planners in many different ways. First, if the health sector reform activities intend to target the health interventions toward the poor, the poverty assessment methodologies can be used to identify the target group. Even if the program does not target the poor explicitly, policymakers would like to know if the interventions are reaching the poor or not. Therefore, the second important use of the methodology could be to evaluate empirically if the interventions are reaching the poor, i.e., whether the interventions have positive impact on access to care, utilization of health care services, and health status of the poor. The third use of the approach will be to determine the degree of pro-poorness of the policy changes. An intervention may reach some of the members of the poor segments although it may not be pro-poor in the sense that benefits obtained by a non-poor exceeds the benefits received by the poor relative to the health needs of the groups. If poverty and health assessments are conducted at the initial stage of policy changes or prior to actual implementation of health sector reform, the information collected can be used as the baseline against which all future assessments can be compared. If a baseline is established, results from future assessments can be used to understand the temporal changes of the effects of health interventions on poor households in the locality.

3. Approaches to Health System Strengthening

Rapid assessment tools may be used for monitoring and evaluation of various types of health reform programs or health system strengthening. The following provides a partial list of health sector programs or interventions one can evaluate using the rapid assessment methodology. Although all these reforms or changes can potentially be evaluated, the time lags between the implementation of the reforms and actual improvements in access, utilization, and health outcomes may not be similar for all reform or system changes. For example, in high infant mortality areas, changing the delivery of service-mix in the health centers to address infant health concerns may have much stronger impact in the short run than a policy of upgrading the existing health centers without changing the service-mix.

- ▲ Establishing or upgrading new health centers/facilities
- ▲ Changing the service-mix available from the health centers
- ▲ Changing the personnel-mix in the health centers
- ▲ Pricing policy/user fees/financial protection
- ▲ Health Insurance: universal, targeted, voluntary
- ▲ Decentralization/devolution/private-public mix

4. Methodology

For rapid assessment of the effects of health programs or interventions on the poor, the whole exercise can be divided into a number of discrete steps. This study intends to carry out all these steps, albeit using information from published literature. Therefore, the methodology proposed here would be useful in identifying the rapid assessment indicators and, once the indicators are identified, instruments can be designed for use in evaluations.

- i. Identify a number of variables useful in rapid assessment to indicate the effect of health programs or interventions on the poor
- ii. Develop empirical tests to indicate the degree of poverty-orientation of the health interventions or programs
- iii. Decide on the questions to be included in the rapid assessment instrument to identify the poor
- iv. Identify health and nutrition indicators likely to be most sensitive to socioeconomic status of individuals and households.

These indicators should also be incorporated in the rapid assessment instrument.

5. Methods for Poverty Assessment

Household income and expenditures are widely used measures of prevalence and depth of poverty. In most developing and developed countries, poverty is defined by income (or expenditure) below a specific cut-off level known as the poverty line. Because the poverty line in a country is based on an absolute minimum level of living, the prevalence of poverty defined by the line is comparable across geographic regions of the country. For example, World Bank defined world poverty line by a level of expenditure or income below \$1.08 per capita per day (Ravallion et al. 1991, Chen et al. 2000). Such a definition of poverty allows comparison of the prevalence and depth of poverty across geographic regions.

In this section, we will first describe income-based poverty measures and the problems of using these measures in rapid assessment. A number of researchers have suggested collecting expenditure data on limited number of goods and services, which are likely to be highly sensitive to overall expenditure levels of the households.

5.1 Poverty Assessment Indicators and Approaches

5.1.1 Income- or expenditure-based poverty measures

The socioeconomic situation of a household is often defined by its income and expenditure levels. Income or purchasing power shows the household's ability to acquire food, shelter, and other household necessities. Income is also related to many other indicators of social status like education and quality of housing. One study compared "equivalent household consumption" and "wealth score" as measures of socioeconomic status to explain the variability of child malnutrition rates (Wagstaff and Watanabe 2002). The study found that consumption per capita explained child malnutrition rates slightly better than the wealth score. Therefore, for analyzing health effects by socioeconomic condition, trying to obtain consumption-based categorization will be better than using other proxy measures. Use of income or expenditure for poverty measurement has a number of advantages:

- i. Income or expenditure variables can identify absolute level of poverty: Income- and expenditure-based poverty is defined by determining a level of income or expenditure required for achieving a minimum standard of living (ability to acquire a minimum nutrient needs or a minimum basket of good). Since the approach uses a minimum consumption basket, it reflects absolute level of poverty rather than relative poverty of households in the community.
- ii. Defines both the prevalence and depth of poverty: Income or expenditure approach can be used to define the prevalence of absolute poverty, i.e., the percent of population who are poor in a community as well as the poverty gap, the depth of poverty of poor individuals (how far the individuals are from the defined poverty line).

- iii. Comparability across geographic regions: minimum consumption-based definition of poverty can be used to compare the degree of poverty in different parts of the country and/or internationally. Therefore, policymakers can identify the regions with higher prevalence and depth of poverty.

Using household income and expenditure levels has a number of significant drawbacks as well.

- i. Data requirement: The data requirement of the approach is extremely high. Even the poorest households have many different sources of income including gifts received, home production, and income or benefits received through targeted programs. Capturing all these sources of goods and income with quantities or amounts received will require asking many specific questions. As an alternative to income data, some researchers prefer to collect information on household expenditures. Again, obtaining information on household expenditure requires data collection on a wide number of goods and services households buy or procure.

As an example, we can use the questionnaire developed by a U.S. Agency for International Development (USAID) project for developing poverty measurement tools (Zeller 2004) to illustrate the problems of collecting expenditure data to assess the poverty situation of households. The benchmark household questionnaire developed for Bangladesh (March 5, 2004) includes a number of questions on purchase, gift, home production, etc., just to obtain total household expenditure level. The questionnaire intends to collect data on 182 expenditure items for households (food, non-food, durables, education-related costs, health-related costs, utilities, and others). Data points in the questionnaire are likely to be in the range of 500 to 1,200, depending upon the number of items households report buying over the recall period (which is also different for different items). If one data point can be collected in 12 seconds, the expenditure component of the questionnaire alone will take 2.0 to 5.0 hours to complete. Time needed to collect information on other items will probably make the questionnaire too long to be completed without considering multiple visits to the same household. Clearly, obtaining household expenditure or income data will require significant investment of time and other resources.

- ii. Accuracy of reporting: In developing countries, income and expenditure information is likely to be highly inaccurate. Households are often hesitant to report their income to an interviewer, leading to significant bias in reporting. Household expenditure information is not considered as personal as income, and expenditure levels reported may be subject to a lower degree of bias. The accuracy of reporting is also due to recall bias of income and expenditures. Recalling total expenditures over the past one week, month, or year is cognitively extremely demanding. Even in market-oriented communities, where expenditures are in monetary terms, recalling expenditures becomes difficult due to price changes of the commodities within a short period of time. Total expenditure on an item also requires that the respondent add up the quantities and values of the purchases made over the recall period when the goods and services were acquired in multiple transactions.
- iii. Problem of valuing home-produced goods and gifts received: In developing countries, this is an important issue. Home-produced goods consumed within the household improve the household's socioeconomic wellbeing; therefore, the monetary value of these goods and services should be considered as part of household expenditure. There are two problems associated with the evaluation of home-produced items: the quantities of home-produced items consumed are often not known to the household members and the market values of the home-produced items are not observable. Although enumerators can use different techniques to help the households to better estimate the quantity of home-produced items consumed, it is unlikely that households in rural communities of the developing world will be able to recall

and report all home-produced items consumed or consumption items received as gifts from others. Zeller et al. (2001) argued that some high-valued items are subject to wide variations in monetary valuation, which can bias the household's ranking in terms of income and expenditure. One such item is the monetary value of owner-occupied housing services. In many rural areas, a housing market simply does not exist and adding the assumed monetary value of housing to other expenditures may introduce significant bias affecting the ranking of households in terms of income or expenditure levels.

In conclusion, although the income and expenditure data are widely used to define poverty, these measures are likely to be biased for developing countries. The data requirement of this approach for determining poverty and socioeconomic categories is very large. Therefore, we need alternative measures or indicators to find the economic and social status of households. In some countries, administrative system may have information on household income and asset ownership (especially for taxable assets). In such a context, getting income information will be relatively low-cost and rapid.

5.1.2 Using a small sub-set of expenditures to assess poverty

Morris et al. (2000) started with total household expenditures and then made an attempt to reduce the list of consumption items so that total expenditures on the reduced item list still correlates well with the total consumption expenditures. If a household expenditure category shows a value of zero for a "large number of households," Morris eliminated those components from the list. The remaining consumption expenditure items were correlated with the total household consumption expenditure levels after converting the variables into log scales. A procedure known as "Max-r" was used to select 10 individual items of expenditure that best preserve the household ranking based on total expenditure level.

The authors used data from Cote d'Ivoire to find a short list of expenditure items. Out of 911 households in the survey, 910 reported zero expenditure on purchased food. The Max-r approach identified following 10 expenditure items for Cote d'Ivoire to reflect total household expenditure. The aggregate expenditures on these 10 items show a correlation coefficient of 0.74 with total household expenditure. Expenditures on these 10 items were also found to be highly correlated with total household expenditures in another survey as well (1988 Cote d'Ivoire Living Standards Measurement Survey).

Subset of expenditure items found to be mirroring total household expenditure were (from Morris et al. 2000)

1. Reimbursement of loans
2. Purchase of cars, bicycles, or other means of transport
3. Funerals
4. Expenses related to home: repairs, painting, insurance, etc.
5. Purchase of domestic and imported cloth
6. School costs (not including books, notebooks, etc.)

7. Repairs and other expenses on vehicles
8. Expenditures on public transport, taxis
9. Purchase of modern and traditional medicine
10. Books, notebooks, etc., for school

The problem with this method is that the short list of limited expenditure categories needs to be developed for each of the countries separately. No theoretical reasoning can be used to help researchers identify the short-listed items for other countries or regions without actually conducting the empirical analysis with national or local data. The authors have suggested working with national-level expenditure survey data to identify the short list.

This method also assumes that the list will be invariant over time. For Cote d'Ivoire, the correlation between expenditures on 10 items and total expenditure declined from 0.74 to 0.72 over the period 1986 to 1988. Although the decline in correlation coefficient is not large, it points to the possibility of significant shift in the relationship between the total expenditure on these 10 items and total expenditure of households in the medium term (five to six years). Two of the 10 items in the list are education related and, therefore, changes in the educational system will significantly affect the expenditure on the selected sub-set. Transportation cost is also very important within the sub-set; out of 10 items, three are related to transportation. Again, development of road transportation system, infrastructure will also affect cost of the sub-set. Another potential problem with the list is that some of the items included in the list may have low probability of occurrence. Inclusion of very low-probability cost items increases the chance of misclassification of households (due to random variations in the proportion of surveyed households participating in the purchase of the items).

5.1.3 Using a single expenditure category as a proxy for total expenditure

Rather than use 10 or more expenditure categories, this approach tries to identify one category of expenditure that may be used as proxy for total household expenditure. Zeller et al. (2001) correlated various indicators of housing quality, food security, asset ownership, etc. with one specific expenditure category, expenditure on clothing and footwear, to identify the variables more likely to be related to household economic status. A number of other researchers also used expenditure on clothing and footwear as proxy for total household expenditure (Aho et al. 1998, Minten and Zeller 2000, Morris et al. 2000). According to these researchers, percent of total expenditure on clothing and footwear appears to remain more or less constant for all household expenditure groups. If this is true, the proportion of total expenditure on clothing and footwear and the actual expenditure on this category can be used to predict total expenditure levels. In other words, expenditure per capita on clothing and footwear should be a good proxy for total expenditure.

To predict household per capita expenditure levels from the amount spent on a specific expenditure category, it is not necessary to identify an expenditure category that shows a direct proportional relationship with total expenditure. Even if the relationship between the expenditure category and total expenditure is non-linear, it is still possible to predict total expenditure from the empirical functional form as long as a significant proportion of variation of total expenditure can be explained by the selected expenditure category. For example, one method of determining the poverty line is to estimate a functional relationship between calorie and protein consumption per capita per day and per capita household expenditure. Once the functional form is known, one can predict the

level of per capita household expenditure given the calorie or protein consumption (Osmany 1982). Therefore, using linear correlation coefficients between a specific expenditure category and total household expenditure to identify the expenditure category to be used as proxy may not be able to identify the best proxy one can find from the data set. The best approach would be to experiment with various linear and non-linear functional forms to find the expenditure category that shows the highest explained variation.

The advantage of using expenditure on clothing and footwear as proxy is that almost all households buy these items from the market and there should be no problem of valuating these. Information on clothing and footwear expenditures should be quite reliable and relatively easy to collect. However, the problem of using one specific expenditure category as a proxy is the potential gap between actual expenditure and predicted expenditure of households. Although the proxy may predict total expenditure levels for household groups quite well, significant number of households may be misclassified due to the gap between the predicted expenditure and actual expenditure levels. However, the degree of error in household classification will not be easy to determine when the data on total household expenditure are not collected.

5.1.4 Using household assets and amenities of life-based assessment to determine poverty

Filmer et al. (1998) proposed that asset ownership, quality of housing, and access to water, sanitation, and electricity can be used to rank households by socioeconomic status. The study observed that the indices based on the above variables are highly correlated with household expenditure levels of. Moreover, the indices appear to explain social condition (measured by education) of households better than the household expenditure levels. Gwatkin et al. (2000) analyzed the DHS data from various countries to calculate the asset-based indices and these indices were used to categorize households into socioeconomic quintiles. The method followed is quite simple. Using the responses on asset ownership, quality of housing, sources of drinking water, sanitation condition, etc., principal component analysis (PCA) was performed and first principal components were derived. These component weights were used as the ‘weight’ to add all the assets and living condition variables together and the resultant score is called the wealth score. Households are categorized into quintile groups based on the wealth scores.

This method of estimating household socioeconomic status has a number of advantages. The data requirement of the method is quite low. The questionnaire needs to collect data on a limited number of assets owned, housing conditions, etc. The reported values are not subject to significant biases and, if necessary, the enumerator can easily observe some of the housing conditions to ensure reliability of the data.

If the wealth scores are correlated with household expenditure levels, can we use the wealth score to indicate prevalence as well as severity of poverty among the households in a locality? Gwatkin et al. (2000) suggest using a fixed set of assets for all countries of the world so that poverty defined by the wealth scores can be compared across different countries. However, it is unlikely that a fixed set of assets will allow such international comparability. The use value of owning an asset will vary quite significantly from one country to another. Land ownership in Asia, where land is extremely scarce, may indicate a significantly different socioeconomic situation (in both absolute and relative terms) than land ownership in low population density regions of the world. Similarly, some assets require availability of electricity; in the absence of electricity, households may not own these assets, even though household income is relatively high. A number of studies have observed that using the same asset items and other variables to obtain the wealth scores for a country greatly underestimates

urban poverty. The types of assets owned by rural households vary significantly from the assets owned by urban households and, because the number of households from rural areas dominates the total sample drawn in developing countries, the wealth score becomes biased for the urban group.

The wealth score estimation also requires the identification of the assets and other variables to be used in the analysis. Filmer et al. (1998) found that the number of assets adequate for creating the wealth index should be between nine and 17. Therefore, total number of variables used for wealth scoring is quite low. For example, the 1998 DHS of Ghana used only a limited number of variables to calculate the wealth indices for each household in the sample: Five floor types for the residential house (0: Parquet, carpet and ceramic tile floor; 1: Brick, vinyl floor; 2: cement floor; 3: Wood, planks floor; 4: Earth and sand floor), five toilet types (1: Flush toilet; 2: Ventilated and improved pit toilet; 3: Traditional pit toilet; 4: Bucket or pan; 5: None or other types), six drinking water sources (1: Piped drinking water inside residence; 2: water from public tap; 3: water from public or private well; 4: water from borehole; 5: water from spring, river, lake; 6: water from tanker truck, rainwater, etc.), and whether the household has telephone, electricity, radio, TV, fridge, bike, motor cycle, and car. Although the total number of options listed here are 24, each household will actually respond to 11 questions only.

In the short run, the asset weights derived from the DHS may be used to find the wealth scores of surveyed households in the country. Therefore, if the asset weights are available, the survey questionnaire should incorporate all the items included in the DHS. A quick analysis of data from Ghana indicates that the asset items incorporated into the DHS survey can help identify the top quintile of the population quite accurately, but the survey did not include asset items which are more likely to distinguish the middle segment of the population from the top or bottom quintiles. This is probably a symptom of a much wider problem: the researchers have not identified the principal discriminating factors that distinguish the poor from the middle. Therefore, at least for Ghana, the wealth items chosen are not diverse enough to show significant differences across households in the poorest 40 or 50 percent of the population. Therefore, further refinement of wealth ownership and living conditions is needed to distinguish the poor from the middle socioeconomic group.

The PCA is one of the many ways one can combine the assets to derive the household wealth score. It is also possible to use some sort of monetary value-based weights to combine the items. Morris (2000) suggested an alternative method of combining the assets which does not require data on monetary value of the assets. This weighting scheme is based on reciprocal of the proportion of study households owning the asset as weight. Therefore, wealth score of a household j should be =

$\sum_{a=1}^A f_{aj} \cdot w_a$, where f_{aj} is the number of assets owned by the household of type “a” and w is the reciprocal of the proportion of households owning the asset type.

Let us apply this approach for Ghana and compare the results with the PCA approach. Because the data set does not report the number of each of the assets owned, we have assumed that the number owned is one if the response to the question is “yes.” For some variables, the values are purely dichotomous and we can only use either 1 or 0 for those (source of water, sanitation facility type, etc.). In Ghana’s data, 3.51 percent of households reported floor type 0, and so the weight of the floor type 0 in the calculation becomes $(1/0.0351)$, or 28.49. Similarly, only 0.22 percent of households reported having a phone, and so the weight for phone ownership becomes $(1/0.0022)$, or 454.545. The correlation coefficient between this approach of calculating wealth scores and the PCA approach was about 0.71. To identify the poor households, it is important to find the sensitivity and specificity of the measure using the PCA approach as the “gold standard.” The cross-tabulation of the new wealth score and PCA-based wealth score indicates that only about 108 households were categorized in the

poorest quintile by both the weighting schemes. If we use the asset-based weights only, Morris's approach can identify the richest quintile with a high degree of accuracy. Because the socioeconomic group we are most interested in is the poorest group, overlap of the two approaches in the poorest quintile is not high enough to justify the use of this alternative approach of ranking of households.

Another method is to add the number of positive responses on the asset questions. If we add the assets and living conditions and correlate that with the wealth scores derived from PCA approach, the correlation coefficient becomes 0.72. This method correctly identifies 334 of the lowest quintile households, but the approach of counting the number of assets owned misclassifies a significant number of non-poor households in the poverty category. Although the count approach identifies more than 80 percent of poor defined by Morris's approach, the problem is that the count approach categorizes 40 percent of all households in the poorest group as all of these households show a count value of exactly three.

In the above paragraphs, we have compared the alternative methods with the PCA-based scores. Because PCA itself is not the "gold standard," it is not possible to conclude whether the alternative methods are more or less efficient in categorizing the households. The comparisons indicate that the alternative methods suffer from the same problems as the PCA, given the data on assets and amenities of life in the Ghana's DHS. One problem with the data set is quite clear: the DHS in Ghana (and possibly in other countries) did not collect data on assets and amenities of life that distinguish the poorest tercile or quintile from the second poorest. Systematic studies are needed to compare the three methods of aggregating the asset information.

5.1.5 Using the housing index to assess poverty

Housing index has been used to identify the poor by using eight housing variables: size of the house, number of stories, structural condition, roof material, wall material, electric supply, piped water supply, and vehicle ownership. The purpose of the housing index is to find the poorest households rather than categorizing all households into more than two socioeconomic groups. For each of the housing variables, the method assigns weights to different conditions. For example, one housing variable is the size of the building; a big house gets a weight of 4 and a medium-size one gets a weight of 2 (zero for small size). All the values appropriate for the households are added together to derive the housing index (see Hatch and Frederick 1998 for a discussion of Amanah Ikhtiar Malasia, AIM, housing index). The KMBI of Philippines also used a similar approach of deriving economic status scores for households. However, KMBI have considered both the housing characteristics and asset ownership for categorizing households rather than using housing variables only.

The DHS of Ghana did not ask all these housing questions in the survey. Using the variables of the DHS, we can roughly calculate a housing index similar to the one proposed by the AIM. There is no information in the data set on roof or wall. We have used floor material as a proxy for roof and toilet type as another housing variable. Following the weighting scheme of AIM approach, the scores we have assigned to the variables are: floor type cement or better=4, wood or planks=2 and earth/sand floor=0; flush toilet=2, ventilated improved pit toilet=1, traditional pit toilet=0.5, other types=0; piped water inside house=2, water from public tap=1, other sources=0, electricity=2; radio ownership=1; bike=5; car=6. This method of valuing the housing index does not correspond well with the principal component-based categorization of households. However, the number of housing variables included in the Ghana DHS is so limited that it is not possible to say if this method may become useful if additional information on wall and roof were there for the analysis. Hatch et al. (1998), however, ranked this method as one of the highest scoring approaches among all the methods surveyed by them.

5.1.6 Grameen net-worth test

The Grameen net-worth test is based on amount of land owned by the household and the amount of land cultivated (but not owned). The instrument also collects information on ownership of productive assets (farm animals, fruit garden, fishing boats, etc.), house and home plot, and ownership of major consumer durables. The instrument also asks the household to report savings in the form of cash or precious metals/jewelry and outstanding debts from formal institutional sources or informal sources. Many of these questions may not provide reliable data due to the sensitive nature of the questions. The concepts of savings and debt may also be very different to different households. For evaluating the effect of health interventions on the poor, this may not be the right instrument to use. For financial institutions, collecting data on savings and debts may be useful, but for evaluating health programs, this type of information will not be very appropriate for understanding the relationship between health and socioeconomic condition.

5.1.7 Two-step screening approach

Another approach mentioned in the literature is the use of a two-stage method for assessing poverty (reviewed by Hatch and Frederick 1998). The two-step approach helps to reduce the cost of data collection. The first stage identifies “poor” households using a limited number of indicators. A more detailed survey is then carried out For households identified as poor.

In stage one, five simple questions serve as the initial screening approach. The five most important indicators of extreme poverty are identified locally through key informant interviews. Households are asked to respond to these five questions, and if the household responds yes to three or more of the questions, it is categorized as poor. The five questions used in Bangladesh were: household owns less than 0.5 acre of land, presence of a wage earner in the household, assets valued at less than 0.1 acre of land, female-headed household with children, school-age children not attending school. After selecting the households on the basis of the five questions, the poverty assessment approach collects data on additional indicators of poverty, including indicators related to housing, education, sanitation, health and nutrition, and assets. In Bangladesh, 65 indicators were used at the second stage.

5.2 Questionnaires Currently in Use to Assess Poverty

This section reviews a number of questionnaires used to assess the poverty of households. These questionnaires use asset-based or other easy-to-collect indicators for assessing poverty. Therefore, by definition, all the questionnaires reviewed are considered rapid assessment questionnaires and none attempt to collect information on household income and expenditure.

5.2.1 Bangladesh Rural Advancement Committee questionnaire

The development program Bangladesh Rural Advancement Committee (BRAC) uses a short questionnaire to identify households in extreme poverty. The questionnaire collects the following types of information:

- i. Marital status of the woman of the house

- ii. Whether the husband is suffering from chronic illness, or disabled, or unable to work due to old age
- iii. Whether the woman is the head of household
- iv. Whether the residential house is owned by the household and, if yes, whether the land is owned by the household
- v. Land area owned by the household
- vi. Ownership of other assets (yes or no), including animals, bicycles, rickshaws, boats, fishing nets, sewing machines, and shop

Although one can define poverty from this questionnaire, no systematic method has been proposed to summarize the information to determine the depth of poverty.

5.2.2 Committee for the Promotion of Public Awareness and Development Studies poverty assessment tool¹

The Committee for the Promotion of Public Awareness and Development Studies (COPPADES) assessment tool (1997) proposes a scoring system to identify poor households. The households are asked about housing conditions; ownership of land, livestock, utensils, quilts, and mattresses; sanitation, family size; food sufficiency; food quality; dress; jewelry; social status; education; and employment. The full questionnaire is reproduced in Annex A.

5.2.3 International Center for Diarrhoeal Disease Research, Bangladesh, poverty mapping questionnaire

The questionnaire used by the International Center for Diarrhoeal Disease Research, Bangladesh (ICDDRDB 2004) is quite simple, and data are easy to collect. After collecting information on household identification, the household head or other respondent is asked about his/her principal occupation and educational attainment. On ownership of assets, the person is asked about ownership of a TV, radio, watch/clock, table/chair, quilt/blanket, bed, and the amount of homestead and cultivable land owned. Because working for hire as an unskilled day laborer is a sign of low income, the household head is also asked if any member of the household supplies labor to the market. Housing condition questions are related to ownership of the house, roof type, the number of rooms, and toilet type. Food security-related questions are as follows: In the past 12 months, how frequently could household members not have three meals a day due to food shortage? Very frequently (four or more days in a month), not that frequently (less than four days in a month), rarely. How often is meat served in the household? Three or more days in a week, less than three days in a week, not served at all in the last three months. How frequently is milk consumed in the household? Finally, a number of questions are asked about clothing and footwear. Do all members of the household have at least three sets of clothing? What proportion of members has shoes or sandals?

¹ From <http://interconnection.org/coppades/assessment.html>

5.2.4 International Food Policy Research Institute Questionnaire

The questionnaire developed by the International Food Policy Research Institute (IFPRI)/Consultative Group to Assist the Poor (CGAP) consists of a number of sections: household identification, food- and dwelling-related indicators, and other asset-based indicators. Food-related indicators are based on the number of meals served to household members in two days, number of days three luxury food items were served in a main meal in the last seven days, number of days only inferior foods were served in seven days, how many days in the last 30 days the household had food shortages, how many months in 12 months the household did not have enough food to eat, weeks of food stocks in the house, etc. The food-related indicators included in the questionnaire appear too numerous for a rapid survey. It is also not clear if all of these will be required for categorizing households by socioeconomic status.

The dwelling indicators used are very similar to other poverty assessment questionnaires. Questions are on number of rooms, roofing material, wall material, floor material, observed physical condition of the main house, electricity connection, cooking fuel used, source of drinking water, and toilet facility.

The instrument also asks about other asset ownership like ownership of land (amount and value), livestock, means of transportation, appliances, and electronics. The questionnaire looks quite short but its first section alone is likely to be very time consuming. In the family structure section, each household member is asked about his/her age, highest level of schooling attained, literacy, main occupation, and expenses on clothing and footwear for the last 12 months. The information from the questionnaire can be used for categorizing households into three to five socioeconomic groups. The study used the survey information to categorize households into three groups.

5.3 Suggested Questions for Rapid Assessment of Poverty

Based on the questionnaires proposed by various researchers and development organizations, a simplified questionnaire has been designed to identify the poor in the community or in the survey (Figure 1). The survey information may be used to conduct the PCA to find the weights to estimate the household socioeconomic score. The lower the score, the poorer should be the household. The questionnaire should include the following components of household socioeconomic status. Note that the instrument does not require finer identification of a number of variables. For example, the question on occupation does not ask about the specific occupation of the main earner. It only intends to determine if the main earner is an unskilled day laborer or not. Unskilled day laborer is used here as the fallback option for those who do not own any productive capital or skills. The UNICEF Multiple Indicator Survey has recently included a number of questions on socioeconomic status (UNICEF 2004), and two questions in the rapid assessment instrument were taken from the UNICEF instrument (Does the household employ a domestic worker? Does the household own farm land and does any member work it?)

Illustrative Survey Instrument for Poverty Assessment

Household identification number _____
 How chosen: _____ Community, _____ Exit interview _____ Insurance participant
 Village _____, Area _____, Facility _____

Name of the head of HH: _____, Age _____, Sex _____
 Years of school completed: _____
 Spouse of head/ woman of the HH _____, Age _____
 Years of schooling _____

Is the main earner an unskilled day laborer? Yes _____, No _____

Does the HH employ any domestic worker (paid worker)? Yes _____, No _____

Does the HH own any farm land? Yes _____, No _____

Does any member of the household work on the land? Yes _____, No _____

Please describe the family structure:

	Number under 1 year of age	Number under 5 years	Number 5-15 years	Number 15+ years
Number of members				
How many not attending school?	XXX	XXX		XXX
How many do not have at least three sets of clothes?				

Housing variables

What is the size of dwelling house or houses?
 First house _____ sq ft., 2nd House _____ sq ft., 3rd one _____ sq ft

How many rooms are used for sleeping of the household members? _____

What is the construction material used for the roof of principal dwelling?
 Thatched/straw _____, Cement/concrete _____, Other _____

What is the wall material of the principal dwelling?
 Mud/straw _____, Brick and cement _____, Other _____

Flooring material of the main dwelling:
 Mud/sand _____, Cement/tile _____, Other _____

Water source:
 Piped water inside house _____, Own tubewell/handpump _____ Other sources _____

Toilet facility:
 Flush/sanitary _____, Pit _____, Others/none _____

Does the household have electricity connection? Yes _____, No _____

Ownership of assets

Does any member own any of the following assets*?

Ownership of high value assets	Car	Yes	No
	Refrigerator	Yes	No
Medium value assets in the community	Radio	Yes	No
	Bed	Yes	No
Ownership of low value assets	Chair/table	Yes	No
	Aluminum/metal utensils	Yes	No

* High, medium and low value assets should be defined for the community through key informant interviews.

Food security

How many main meals were served yesterday? One _____, Two _____, Three _____

How many days in the past seven days _____ (preferred staple or cereal) was not served for dinner?
_____ days

During the past 30 days, for how many days did the household not enough to eat? ____ days

In the season when food prices are highest in the market (specify the month), do you face food shortage in the household? Yes _____, No _____

6. Methods for Assessing Health Status and Health Care Utilization

Identifying the indicators of poverty is just one aspect of assessing the effect of health sector reforms and strengthening on the health of the poor. The other side of the assessment is to find appropriate indicators of health status. We need to identify health indicators which are likely to be sensitive to health sector changes in the short run. Moreover, we need to identify the indicators which are more likely to be associated with the improvements in the health status of the poor. Improvements in health systems affect the health status of population after a lag, often relatively long. For this reason, rapid assessment needs to examine health care utilization as well as short-term health status measures.

In the first part of this section, a number of health status measures are identified for use in rapid assessment based on the multi-country analyses conducted by the World Bank.

6.1 Sensitive Measures of Health Status, Social and Demographic Status: Indicators useful in the short-run

The World Bank used the Demographic and Health Survey data to find the differences in health and educational or knowledge variables among five wealth score-based groups (Gwatkin et al. 2000). The prevalence of these conditions were calculated for all the quintiles, and the ratios of the prevalence rates between the lowest and highest quintile groups have been used here to identify the health indicators most likely to be sensitive to changing socioeconomic status. The potential sensitive indicators with the ratios are presented in Annex B.

The most sensitive indicators associated with socioeconomic status of the population for the countries presented in the two volumes of the World Bank study are listed below:

- i. Adolescent fertility rate (15-19 years, births per 1000 women)
- ii. Percent of children age 12-23 months who have no BCG, measles, or DPT vaccination
- iii. 3+ ANC visits to medically trained person
- iv. Delivery attended by a medically trained person
- v. Percent of women age 15-49 years who use a modern method of contraceptive
- vi. Percent of women age 15-49 years with body mass index (BMI) less than 18.5
- vii. Percent of children under age 5 years whose height for age is below -3SD
- viii. Deaths under age 1 year per 1,000 live births

- ix. Deaths under age 5 years per 1,000 live births
- x. Births per woman age 15-49 years
- xi. Percent of children under age 5 years with weight for age below -3SD.

Although the DHS surveys collect all the variables mentioned above on a regular basis, obtaining a reliable estimate of infant and child mortality is often difficult. Sastry (2002) suggested that the questionnaire should ask adult women about the number of children ever born, number alive at the time of the survey, number who died as a child, age of the woman, and age at first marriage. An indirect method was proposed to define excess mortality for each socioeconomic group.

It is important to note that utilization of health care services for fever, respiratory illnesses, or diarrhea were higher for the highest socioeconomic group but the ratio of the utilization rates were not consistently high enough to justify their inclusion in our short list. Among the child nutritional status measures, another study (Zere and McIntyre 2003) found that stunting is the most sensitive indicator for changes in socioeconomic status and wasting was the least sensitive.

6.2 Prevalence of Diseases and Poverty: The Netherlands Study

The Netherlands study identified a number of health-related conditions that appear to be relatively more common among individuals from lower socioeconomic groups (see Mackenbach 1994). These health conditions are:

- i. Less than “good” general health
- ii. Diabetes
- iii. Stomach ulcer
- iv. Heart disorder
- v. Low back pain
- vi. Arthritis
- vii. Physical disabilities
- viii. Having no teeth

Another study examining the stroke mortality rate in 10 European countries also found high variations between low and high socioeconomic status. The stroke mortality rate shows the highest socioeconomic variability for the age group 30-59 years. The gap between the lowest and highest socioeconomic categories declines with age and becomes almost similar beyond 75 years of age (Avendano et al. 2004).

Although the prevalence rates for a number of diseases are likely to be related to poverty, it is not possible to come up with a list of diseases applicable in all regions of the world. For example, prevalence of diabetes was found to be higher among the poor households in the Netherlands, but in developing countries the opposite may very well be true. Therefore, the disease list should be

developed for each country or region based on prior surveys. For example, in poor countries like Bangladesh, incidence of diarrhea appears to be related to socioeconomic status of household.

6.3 Unmet Needs as Measures of Access

If the health sector reform activities are pro-poor, it should be able to reduce the unmet need of the population. Unmet need may be used as a measure of access to health care services and an improved health system should reduce access problems.

A study by Liberatos et al. (2000) proposed a method of estimating the pediatric unmet needs. The study participants were children age 1–5 years and adolescent mothers age 13–19 years in New York. The survey participants were asked if they experienced a set of symptoms and if they consulted a physician in response. The physical symptoms were also judged by expert panel which determined the percent of patients with symptoms that should have sought care. The percent of cases that should have sought medical care but did not seek care has been used as a measure of unmet need. For estimating the unmet needs among children, the following variables were used: (i) poor appetite (ii) vomiting (iii) sore throat (iv) ear infection (v) cough (vi) fever (vii) diarrhea (viii) weight loss (ix) unusually cranky (x) constipation (xi) accidental poisoning.

World Bank Quantitative Techniques for Health Equity Analysis (technical note #13) also proposed a method of estimating the unmet demand. This approach actually uses health care utilization data and estimates the coefficients of various “need” variables by regression analysis. The regression result is used to predict utilization if the non-need variables are set at the mean value of the sample.

6.4 Utilization as a Measure of Access

A number of utilization variables have become very popular as measures of access to the health care system. Many of the utilization variables are related to maternal and child health activities. For example, access to antenatal care is considered an important indicator to evaluate the success of the health system in reaching a vulnerable group (women).

Thind and Cruz (2003) examined the determinants of health service utilization in the Philippines. They found that maternal education and number of illnesses determine the decision to seek care. In care seeking, economic status of household was not important but, once the decision has been made to seek care, economic status affected the choice of providers (public or private). Therefore, we can include the choice of providers as a proxy for socioeconomic status but not a proxy for the effect of health system on health status. With the improvements in health delivery system of a country, the choice between these two may change significantly and the change in the ratio may be used as an indirect measure of relative availability and quality of public and private facilities.

6.5 Suggested Questions for Rapid Assessment of Health Effects

The following questions may be included with the rapid assessment instrument to examine the effects of health reform programs on the health situation of the poor. A number of questions here have been adapted from Knowledge, Practice and Coverage (KPC) 2000 Rapid Core Assessment Tool on Child Health (CATCH) (2000). Note that many of the variables selected are likely to be sensitive to the economic status of the household.

Health outcome-related variables

Nutritional status of children (all children under 5 years of age)

SI #	Name of child	Sex (M/F)	Date of birth DD/MM/YY	Height (meters)	Weight (kilograms)
1					
2					

Immunization record of children (all children under 5 years)

Have immunization card and completed the table from card? Yes / No

SI #	Name of child	Received BCG (Y/N)	All polio doses (Y/N)	All DPT doses (Y/N)	Measles (Y/N)
1					
2					

For all women age 15-49

SI #	Name	Age	Age at first marriage	Number of total live births	Number of children alive	Number died as a child (less than 5 years)
1						
2						
3						

Health care seeking behavior

Did any of the children under 5 years experience any of the following symptoms during the past two weeks and, if yes, did you seek care?

Symptoms	Child 1	Child 2	Child 3
Poor appetite	Yes No		
Vomiting	Yes No		
Ear infection	Yes No		
Cough	Yes No		
Fever			
Diarrhea			
Blood in stool			
Sought medical care?	Yes No		
If, yes, private/public?	Private Public		

Mother's health status

Ask these questions for last pregnancy or last two pregnancies

SI #	Name	Used ANC 3+ times?	Trained medical person present during delivery?	In the last two pregnancies, did you experience serious complications?

Questions on prevalence of illnesses:

Country or area specific illnesses should be used.

7. Survey Design, Sample Selection, and Analytical Methodology

Preceding sections identified simple questionnaires that can be used to understand the poverty status and health status of the population. Simplicity of the questionnaires is one of the most important aspects of a rapid assessment technique. In order to make an assessment truly rapid, the survey design and the analytical methodology also must be easy to conduct. This section presents the survey design-related aspects of rapid assessment.

7.1 Survey Design and Sample Selection

To assess the effects of health sector strengthening and reform on health status of the poor, we need two types of surveys: a community survey to understand the poverty status of the population and program participant or programming surveys to assess the socioeconomic status of beneficiaries of health programs or interventions. If the health sector reform program plans to conduct a baseline survey of the intervention area, the questions related to poverty and health status can be incorporated into the household survey. Traditional surveys, including the Demographic and Health Surveys, do not provide enough information for understanding the effects of health reform programs on health status of the poor. Therefore, these surveys should either be adapted to this need or supplemental rapid surveys should be planned. The following discussion concentrates on community-level surveys and more specialized surveys to assess the progress of the program and its impact on the poverty groups.

7.1.1 Community-level surveys

For rapid assessments, the approach often used is to conduct a cluster survey. This type of survey identifies geographic clusters using external information (available from the census department, for example). The advantages of the cluster survey are that it is easier to conduct and can be completed within short period of time. Because they are less efficient than a purely random survey in providing population-level estimates, the sample size should be larger (see Murphy 1998). The sample size should be even larger if the purpose of the surveys is to estimate the progress of the reform program on health status over a number of months or years. Therefore, community-level surveys have two potential uses: understanding the underlying poverty and health status of the population (against which the status of program participants can be compared) and/or evaluating the effect of the program or intervention on poverty or health or both. In this sense, the surveys can potentially be used for evaluation rather than a tool for monitoring (see U.N. Development Program, 2000: Chapter 10).

The evaluation can also use the cluster survey methodology proposed by UNICEF Multiple Indicator Cluster Surveys (MICS) (UNICEF 2004). The usual approach is as follows. From a list of clearly demarcated clusters, the survey randomly selects 20 to 25 clusters. In each cluster, a central point of the cluster is defined (the village market, school, church, temple, mosque, etc.). From this

point, the interviewers walk in one direction and stop at each house to collect data. Data collection continues until the selected number of surveys is completed.

The number of households to be surveyed depends on the proportion of households in poverty and the number of clusters surveyed. For a relatively large number of clusters, the households to be surveyed should be twice as many as the required sample size for a purely random sample of households. For a purely random sample, population parameters can be obtained with 10 percent precision by surveying 96 households (50 percent poverty). If the precision desired is ± 5 percent, the sample size for random sample survey becomes 384 (Murphy 1998). Because the community survey in this exercise will be used as the basis for comparison, a high degree of precision is preferable. If we consider ± 5 percent as the precision level, the cluster survey should collect data from at least 768 households (double of the random sample survey). In other words, total sample size for the community survey should be around 800.

The above sample size calculation assumes that the community survey will not be used for monitoring and evaluation of health reform programs. If the researchers plan to conduct the survey every year (or more frequently) to assess the progress of the intervention, the precision level required will be even higher. This is because the surveys should be able to identify relatively small changes in health status or other measures of access over the months. If the surveys are conducted every four or five years, a precision level of ± 5 percent should be enough but if the monitoring and evaluation surveys are conducted every six months or so, the precision level should be better (say ± 2 percent). For this higher degree of precision, the cluster sample will need a sample size of about 4,800.

It is suggested that the community-level surveys be used only for understanding the poverty and/or health status of the community members rather than as a monitoring and evaluation tool. In that case, the community surveys may be conducted once in two to three years.

7.1.2 Program-specific surveys

To understand the progress of a program or intervention, community-level information needs to be supplemented with small-scale, rapid surveys. Depending upon the nature of the health reform activities, one or more of the following types of surveys can be used.

7.1.2.1 Programs based on explicit identification of beneficiaries

If the health intervention program requires explicit identification of beneficiaries, it is likely that the program will have a list of participants with the date of enrollment. A random sample of survey participants can be drawn from this list. Depending upon the nature of the program, the questionnaire can be adapted somewhat to understand the effects on the poor (when joined the program, premium paid for health insurance, household members covered by the insurance, etc.). An IFPRI study suggested that information be collected from about 200 to 300 participants from each locality to monitor the effect of microcredit programs on the poor.

7.1.2.2 Exit interview survey in health facilities

If the participants are not identified explicitly (or it is a generalized program), the evaluation will require information on utilization of services by the population. The first step will be to randomly select a number of health centers from the list of all health facilities (involved in the health sector reform activities) in the geographic region where the reform activities have been implemented. In

general, the number of facilities to be selected for the survey would be four or five. From each of the health facilities (depending on the number of facilities being surveyed), 40 to 50 patients (patient families) should be selected using a systematic approach (e.g., every other patient). The exit survey questionnaire should include the poverty assessment questions as well as questions on health status in general. Additional questions on the reasons for current visit, costs, and other related issues should also be included in the survey.

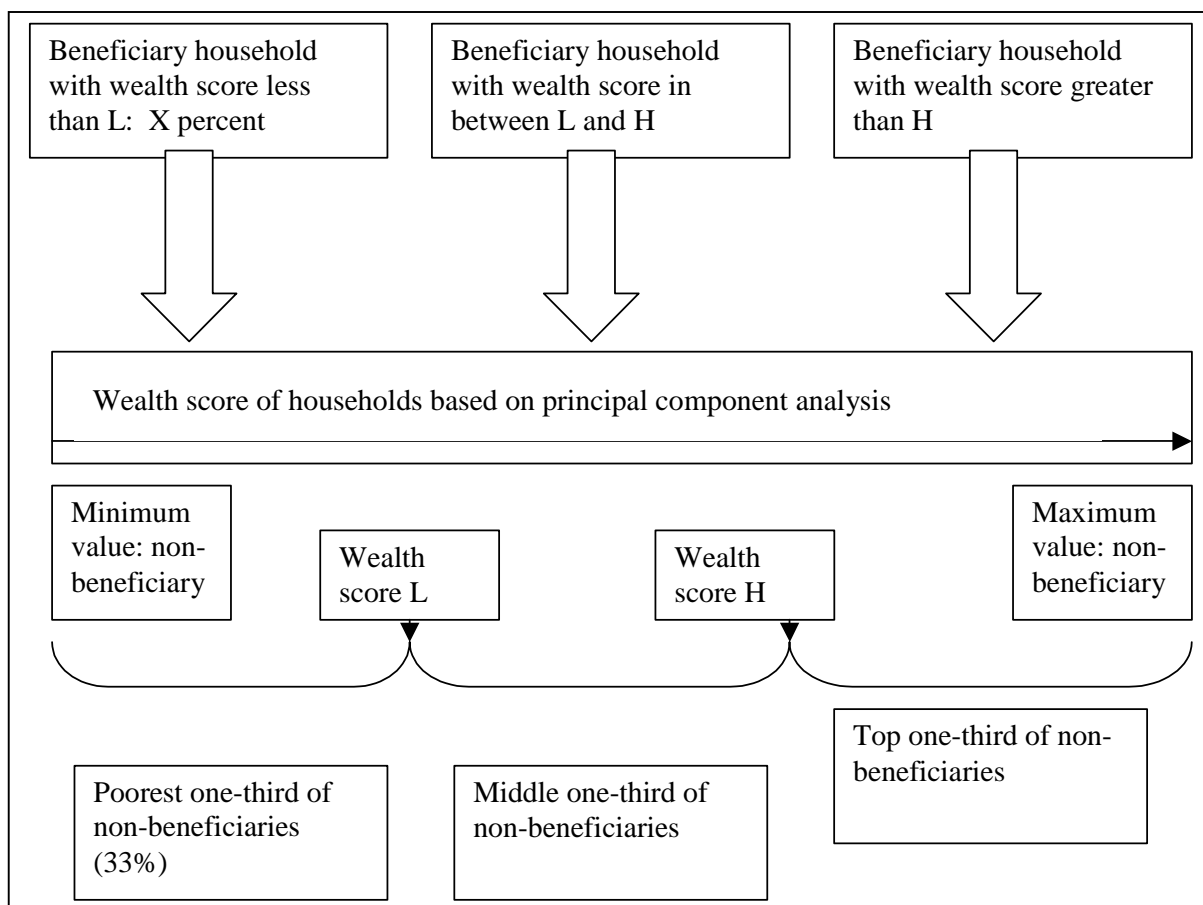
7.2 Analytical Method for Evaluation

The IFPRI study (Henry et al. 2003) proposed using a simple analytical approach for comparing the effectiveness of a microcredit program in reaching the poor. It suggested surveying 300 randomly selected non-participants from the community and 200 participants from the list of participants. The information collected from the non-participants was used to calculate the wealth score for each household (using principal component analysis). Using the first principal component weights for each asset or living condition, wealth scores were derived for the 200 participants surveyed.

The 300 non-participants were categorized into three equal socioeconomic categories based on the wealth indices. Therefore, the poorest group was defined by the lowest 100 wealth scores. For each tercile, the cut-off wealth score was obtained. For example, in one survey area, the cut-off scores were -0.70 and +0.21, i.e., the poorest tercile has a wealth score of less than -0.7, the middle tercile had a wealth score of -0.7 to +0.21, and the top tercile had a wealth score of more than +0.21. To find the degree of success of the program in reaching the poor, the clients were also categorized into three groups using the above cut-off scores (based on non-client score distribution). For the program to be successful in reaching the poor, proportion of client household below the poverty cut-off level (less than -0.7 in the example) should be significantly higher than 33 percent, the percent of non-clients below the level.

Figure 1 is taken from Henry et al. (2003) to show the method the authors used to examine the effectiveness of the program in reaching the poor. The degree of poverty orientation of the program is determined by comparing the percent of beneficiary households below the lower cut-off score L , say X percent, with 33 percent (percent of non-beneficiary below the cut-off level L). If $X < 33$ percent, the intervention is not pro-poor; if $X > 33$ percent, it is pro-poor. The degree of poverty orientation will be reflected by the ratio $(X/33)$; the higher the ratio, the greater should be the poverty orientation of the program.

Figure 1: Methodology to Estimate the Degree of Poverty Orientation of a Program



Source: Based on Henry et al. (2003)

The authors have also applied this method to compare the poverty orientation of four microfinance programs. Although the method worked well in the four case studies the report has used, it has a number of serious drawbacks. In fact, if the program can effectively target the poor, this method will not be useful in understanding the poverty orientation of the program.

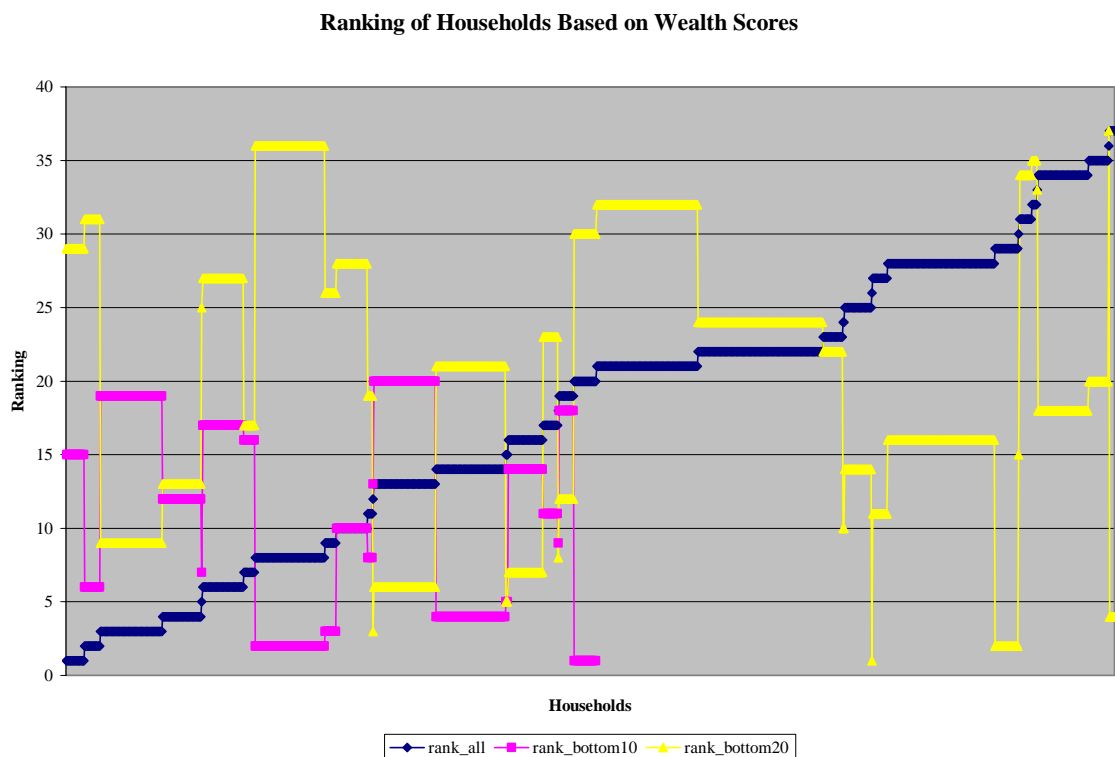
For illustration purposes, we can use the Ghana DHS data set. Assume that a health program intends to target the poorest 10 percent of the population and it perfectly targeted the poorest. In this case, the non-beneficiary population does not include anyone from the poorest 10 percent group. Estimating the wealth scores based on the non-beneficiary population will become highly biased, and it is possible that some of the assets or living conditions of poorest 10 percent do not show up in the rest of the population. If that happens, the assets used to define the wealth scores for non-beneficiary groups may not include the assets important for the poorest group. This may lead to the situation that some of the assets or living conditions important for the poorest will have no principal component weights. Even if the principal component weights are available, the weights may become very biased affecting the ranking of households.

Looking at the asset distribution of households in the Ghana DHS, the poorest 10 percent (lowest 10 percent in terms of wealth scores calculated for the whole sample) report ownership of nine items or conditions rather than the 24 items used for calculating the scores (they have floor types 2=cement, 3=wood and 4=earth or sand, toilet type 3=traditional pit and 5=none, water source type

3=public/private well, 4=borehole, and 5=spring water/lake and bike). This is not surprising as the poorest are likely to have only few assets and relatively poor living conditions. If we use bottom 20 percent as the target group and exclude them from the calculation of asset scores, the new weights for the assets are also likely to be biased, as only 12 of 24 items show up among the households in the bottom 20 percent.

For Ghana, the recalculation of wealth scores based on the information contained in the top 90 percent and 80 percent of the sample (defined by wealth scores calculated for the whole sample) provides quite different rankings of the same households. In Figure 2, households ranked by wealth scores for all households was used for plotting the rank of the same households by other two estimates of wealth scores. Note that the relationship between the all-household ranking and rankings based on data for top 90 percent or top 80 percent of households (defined by wealth score of the full sample) shows no systematic pattern. Clearly, excluding the bottom 10 percent or 20 percent of households distorted the ranking of households very significantly. In the graph “rank_bottom 10” shows the ranking of households based on wealth scores derived for the top 90 percent households only. Using the top 80 percent for calculating scores distorts the rankings of households even further. In the real world, no program is perfectly efficient in targeting. Therefore, some of the poor households may remain as non-beneficiary and would be present in the sample drawn from the non-beneficiary population. Even if the targeting is not 100-percent efficient, excluding a higher proportion of poor households than non-poor households from the random sample of households will create distortions. The analysis here demonstrates that, even if the program is 100-percent efficient, comparing the non-beneficiaries with beneficiaries where the wealth score cut-off has been defined using the asset ownership of non-beneficiaries will indicate that the program was not that successful in targeting the poor (when it actually targeted them perfectly).

Figure 2. Ranking of Households Based on Wealth Scores



To avoid this potential bias, the suggested approach to estimating the poverty orientation of the program is to compare the exit interview survey results or beneficiary survey results with the benchmark wealth cut-off defined by a random selection of households in the locality. In the random sample, both the beneficiaries and non-beneficiaries of the program will be included and the resulting wealth score will not be biased for calculating the degree of poverty orientation of the intervention or policy changes.

8. Conclusions and Recommendations

This review has analyzed potential rapid methods to identify the poor and assess the effects of health reform activities and interventions on the health status of the poorest sections of the population. The term “rapid assessment” has been used here in a relative sense, to indicate the methodological approaches that can provide relatively accurate and appropriate information to policymakers within a short period of time. How short the time frame should be depends on the nature and size of the interventions to be evaluated. Some interventions or changes may not show significant health effects within a year (e.g., buying an x-ray machine for a health center), while other interventions may show positive outcomes within a month (e.g., vaccination of infants, use of oral salt for the control of diarrheal diseases). Once the minimum time is allowed for the operation of the project, rapid assessments need to provide relevant information to policymakers in the short run, preferably within three to four months after the initiation of the assessment.

Because the objective is to find the effects of health reform activities on the health status of the poor, the rapid assessment needs to get information on both poverty status of households and health effects of interventions. This review examined a number of approaches used in the literature to categorize households by economic status. Ownership of a number of assets and some living condition indicators appear to be quite sensitive in identifying the poor and the non-poor households. Based on these indicators and using the questionnaires currently being used, we have developed a short questionnaire that can be used in poor developing countries. It includes questions on educational status of the head of the household, housing condition, employment status, whether the household hires any help, whether the members work outside, ownership of various assets and food security. It asks for two asset types from low-value, medium-value and high-value categories so that it will be easier to discriminate among the households in terms of their economic situation. Since the questionnaire is about one page long, time needed to collect the data should not be more than 15 minutes per household.

Once the data are collected, households are categorized by socioeconomic status so that poverty group can be identified. There are many different ways that the information on household economic status can be summarized. Because the wealth scores based on principal component analysis are widely used in the literature, it is suggested that the indicators from the questionnaire be combined using the same PCA approach. However, in evaluating the targeting efficiency of a health program, we have argued that the method proposed by the IFPRI should not be used. The IFPRI method uses the wealth scores obtained from a random sample of non-participants to derive the asset scores of participants. Comparing the asset scores of participants with the distribution of asset scores of non-participants, the method determines the target efficiency (i.e., program’s ability to reach to the poor compared to the non-poor). The problem with this approach is that if the program is successful in targeting the poor, wealth scores based on the data of non-participants become biased. Use of these biased wealth scores categorize many participants as non-poor even though they actually were poor. We have illustrated the problem by using the DHS data from Ghana. If the poorest 10 percent are removed from the non-participant category, the scores become completely different from the scores obtained if all households were in the sample during the calculation of wealth scores.

For rapid assessment of health effects, another questionnaire was proposed using the KPC 2000 Rapid CATCH questionnaire as the starting point. The problem with rapid assessment of health is that many of the final desired outcomes cannot be observed within a short period of time and, therefore, it is important to identify either the relatively more sensitive health measures or the intermediate processes or outcomes. Review of the literature suggests that a number of nutritional status measures are quite sensitive to economic position of households and access to quality health care services. Height-for-age and weight-for-age scores for children are quite sensitive to socioeconomic status and both these measures can be used in a rapid assessment.

Unmet demand for various types of conditions is another set of indicators that can be used in rapid assessment. For some illnesses and symptoms, children should be seen by health professionals and these conditions are incorporated in the questionnaire to understand the prevalence of these illnesses and the degree of unmet demand by socioeconomic groups. Higher unmet demand among the poor indicates the failure of the health system in reaching the poor. Child mortality and maternal health are also quite sensitive to the availability of health services and socioeconomic status of households.

Combining these two questionnaires, we should be able to evaluate health programs and their impact on the health of the poor within a short period of time. This combined questionnaire should not take more than half an hour to implement. Although the questionnaire should work well in rapid assessments, further research is needed to validate the method as a rapid assessment of health reform activities on health status of the poor.

Annex A: COPPADES Poverty Assessment Tool

**COMMITTEE FOR THE PROMOTION OF PUBLIC AWARENESS
AND DEVELOPMENT STUDIES (COPPADES)**

Poverty Assessment Tool 1997

Name of the applicant Age: Sex:

Address:Date: Interviewer's Name.....

Signature.....

Place of Interview:

A. PHYSICAL SETTING:

HOUSE:

SN	Poverty Credit Criteria	Tick
1	Hut having bamboo walls	7
2	Hut with mud and rock walls	5
3	Thatch roofed one storey house	3
4	Better than above	2

LAND:

SN	Poverty Credit Criteria	Tick
1	Landless (no land at all)	7
2	Land only enough for making a hut	5
3	Has some land on tenancy	3
4	Owens up to 5 ropanis of land	2
5	More than 5 ropanis of cultivable land	1

LIVESTOCK:

SN	Poverty Credit Criteria	Tick
1	Has no livestock at all	7
2	Has 5-10 chickens	5
3	Has 5-10 Goats and/or cows	3

4	Has 1-2 buffaloes and/or goats and cows	2
5	Has buffaloes and bulls and others	1

UTENSILS:

SN	Poverty Credit Criteria	Tick
1	Uses clay and aluminum only	3
2	Uses plastics and aluminum plates	2
3	Uses copper, bronze and brass utensils	1

QUILTS AND MATTRESSES:

SN	Poverty Credit Criteria	Tick
1	Uses rags (jute bags)	4
2	Thick rags ("bhetto" made of cotton rags)	3
3	Thin cotton quilts and mattresses	2
4	Warm cotton and woolen mattresses	1

B. HEALTH AND SANITATION:

PHYSICAL CONDITION OF THE FAMILY MEMBERS:

SN	Poverty Credit Criteria	Tick
1	Family members look physically weak	6
2	Seem to be of average physical condition	3

SANITATION:

SN	Poverty Credit Criteria	Tick
1	Use local material for washing/bathing such as pina, balu, ashes, rittha etc.	4
2	Use laundry soap for all-purpose washing/bathing	3
3	Use variety of soaps (laundry and bathing soap)	2

FAMILY SIZE:

SN	Poverty Credit Criteria	Tick
1	More than 10 in the family	5
2	More then six 6 in the family	4
3	Less than six 6 in the family	3

FOOD SUFFICIENCY:

SN	Poverty Credit Criteria	Tick
1	Enough for less than one month in a year	7
2	Enough for three months in a year	5
3	Enough for six months in a year	3
4	Enough for 9 months in a year	1

FOOD QUALITY:

SN	Poverty Credit Criteria	Tick
1	Eats meat once a year and never milk	4
2	Eats meat once every three month and occasionally milk	2
3	Eats meat every month	1

C. SOCIAL PRESENCE:**DRESS:**

SN	Poverty Credit Criteria	Tick
1	Depending on disposed (given away) clothes from other people	7
2	One pair of minimal quality clothes	5
3	Having shoes, pants and saris good looking	3

JEWELRY:

SN	Poverty Credit Criteria	Tick
1	Wear no jewelry	7
2	Wear fake ornaments (looking like gold)	5
3	Wear one pair of gold ear rings	3
4	Wear better ornaments than above	2

SOCIAL STATUS:

SN	Poverty Credit Criteria	Tick
1	Not invited in any social occasion	3
2	Occasionally invited	2
3	Member of Local Users' Committee, etc	1

D. EDUCATION AND AWARENESS:**FAMILY EDUCATION:**

SN	Poverty Credit Criteria	Tick
1	All illiterate	5
2	Only children are literate	3
3	At list once person in the family with S.L.C. degree or above	2

IGNORANCE OF OPPORTUNITY

SN	Poverty Credit Criteria	Tick
1	Does not know what resources are available in the village	4
2	Knows about VDC, ADB/N etc	3
3	Knows about COPPADES5and/ or other NGOs	2
4	Knows more	1

E. EMPLOYMENT:**JOB:**

SN	Poverty Credit Criteria	Tick
1	Does portering	4
2	Works for other people on wages	3
3	Does his own work	2

FAMILY EARNING

SN	Poverty Credit Criteria	Tick
1	Monthly Rs. 900/- (if employed)	4
2	Monthly Rs. 1500/- (if employed)	3
3	Monthly Rs. 3000/- (if employed)	2

DEBT:

SN	Poverty Credit Criteria	Tick
1	Working to pay off parental debt (Baandha)	7
2	Working to pay off food grain debt (Hali)	5
3	In debt because of accident and/ or social cultural obligation Kriyaa/Arghun, wedding etc	3

EMPLOYMENT:

SN	Poverty Credit Criteria	Tick
1	Employed 25% of the time	5
2	Employed 50% of the time	3
3	Employed more than 50% of the time	2

Total Score:

Abbreviations used:

- | | |
|------------------------|--|
| 1. NGO | Non Governmental Organizations |
| 2. VDC | Village Development Committee |
| 3. S.L.C | School Leaving Certificate |
| 4. ADB/N | Agriculture Development Bank, Nepal |
| 5. COPPADES
Studies | Committee for the Promotion of Public Awareness and Development
Studies |

Note: Poverty level will be assessed on the basis of credits scored from high to low. Scores 65 or above are placed as those who need urgent attention.

Annex B: Highly Sensitive Health Indicators

Indicators that Appear to be Sensitive to Socioeconomic Status of Households: Selected Countries

Source: Gwatkin et al. (2000)

SENSITIVE HEALTH INDICATORS WITH RESPECT TO SOCIOECONOMIC STATUS: Ratio of the indicators for low socioeconomic status households and high socioeconomic status households								
INDICATORS	COUNTRIES							
	Armenia 2000	Bangladesh 1996/1997	Bangladesh 2000	Benin 1996	Benin 2001	Bolivia 1998	Brazil 1996	Burkina Faso 1998
Adolescent fertility rate (15-19 years) births per 1000 women	3.3	21	2.7	5.4	5	6.2	6.3	1.9
% Of under 5 whose weight for age is between -2 and -3, Z-scores	2.6	1.5	NA	1.8	2.4	5.3	3.8	1.1
% Of age 6-59 month children with blood Hb levels below 7.0g/dl	4	NA	NA	NA	2	6.4	NA	NA
% Of children age 12-23 months who have no BCG, measles or DPT	0.8	3.7	5.7	6.5	6	NA	2.1	7.8
Medical treatment of fever (% seen medically if ill)	0.5	0.6	0.4	0.4	0.6	0.4	0.4	0.3
Medical treatment of ARI (% seen medically if ill)	1.2	0.4	NA	0.4	0.5	0.4	0.5	0.3
Use of oral rehydration therapy (% treated with ORS, RHF or increased liquids)	NA	1	1	0.7	0.9	0.8	1.1	0.6
ANC visits to a medically trained person	0.9	0.3	0.3	0.6	0.7	0.5	0.7	0.6
3+ ANC visits to a medically trained person	0.5	0.1	0.1	0.5	0.6	0.3	0.7	0.5
Delivery attendance by medically trained person	0.9	0.1	0.1	0.4	0.5	0.2	0.7	0.2
Delivery attendance by a doctor	0.7	0.1	0	0.1	0.1	0.1	0.5	0.1
% Of women aged 15-49 who use a modern method of contraceptive	0.5	0.8	0.7	0.1	0.3	0.2	0.7	0.1
% Of women age 15-49 whose body mass index is < 18.5				3		0.2		
% Of children under 5 whose height for age is below -3d z-score					3.5	8.6	15.8	
% Of children under 5 whose weight for age is below -3d sd z-score					6.3	3.1	4	
% Of women with at least one daughter who have a daughter who is circumcised					38.5			
% Of women age 15-49 who are circumcised					7.8			
% Of women age 15-49 who have genital discharge					0.2		4	0
% Of women 15-49 who have genital ulcer					0.3			0
Deaths under age 12 months per thousand live births						4.2		
Deaths under 5 years/1000 live births						4.6	3	
Births per women 15-49						3.5		
% Of children under 5 whose height for age is between -2 to -3 sd z-score						6.5	8.4	
% Of women age 15-49 with blood Hb levels between 7.0 and 9.9 g/dl						3.7		
% Of women age 15-49 with blood Hb levels below 7.0g g/dl								
% Of women age 15-49 who are circumcised with vaginal area sewn closed								0.2

SENSITIVE HEALTH INDICATORS WITH RESPECT TO SOCIOECONOMIC STATUS: Ratio of the indicators for low socioeconomic status households and high socioeconomic status households								
INDICATORS	COUNTRIES							
	India 1992/93	India 1998/99	Indonesia 1997	Jordan 1997	Kazakhstan 1995	Kazakhstan 1999	Kenya 1998	Kyrgyz Republic 1997
Adolescent fertility rate (15-19 years) births per 1000 women	3	3.7	5	1.5	3.7	2.2	2.6	4.1
% Of under 5 whose weight for age is between -2 and -3, Z-scores	1.3	1.5	NA	2.9	4.3	0.8	3	1.4
% Of age 6-59 month children with blood Hb levels below 7.0g/dl	NA	1.6	NA	NA	8.3	2.4	NA	2.1
% Of children age 12-23 months who have no BCG, measles or DPT	6.1	11.5	12.9	0	NA	0.9	4.8	NA
Medical treatment of fever (% seen medically if ill)	0.7	0.7	0.7	1	NA	NA	0.7	NA
Medical treatment of ARI (% seen medically if ill)	0.7	0.6	0.6	1	NA	NA	0.7	NA
Use of oral rehydration therapy (% treated with ORS, RHF or increased liquids)	0.6	0.7	0.9	0.9	NA	0.6	0.9	1
ANC visits to a medically trained person	0.3	0.5	0.8	1	0.9	1.1	0.9	1
3+ ANC visits to a medically trained person	0.3	0.3	0.7	0.9	0.9	0.9	0.9	1
Delivery attendance by medically trained person	0.2	0.2	0.2	0.9	1	1	0.3	1
Delivery attendance by a doctor	0.1	0.1	0.1	0.6	0.7	0.8	0.2	0.6
% Of women aged 15-49 who use a modern method of contraceptive	0.5	0.5	0.8	0.6	0.9	0.9	0.3	0.8
% Of women age 15-49 whose body mass index is < 18.5		3.5					3.2	
% Of children under 5 whose height for age is below -3d z-score		3.6		6.8				
% of children under 5 whose weight for age is below -3d sd z-score		5.3		14			3.4	3

SENSITIVE HEALTH INDICATORS WITH RESPECT TO SOCIOECONOMIC STATUS: Ratio of the indicators for low socioeconomic status households and high socioeconomic status households								
INDICATORS	Countries							
	Pakistan 1990/91	Paraguay 1990	Peru 1996	Peru 2000	Philippines 1998	Rwanda 2000	Senegal 1997	South Africa 1998
Adolescent fertility rate (15-19 years) births per 1000 women	2	5.3	9.4	7.1	10.8	1	5.3	4.9
% of under 5 whose weight for age is between -2 and -3, Z-scores	1.8	10.2	15.7	18.6	NA	1.7	NA	NA
% of age 6-59 month children with blood Hb levels below 7.0g/dl	NA	NA	NA	NA	NA	NA	NA	NA
% of children age 12-23 months who have no BCG, measles or DPT	5.9	4.3	54	21	16.4	2.8	1	1.6
Medical treatment of fever (% seen medically if ill)	0.5	0.3	0.6	0.6	0.8	0.5	NA	NA
Medical treatment of ARI (% seen medically if ill)	0.6	NA	0.6	0.6	0.6	0.3	NA	1
Use of oral rehydration therapy (% treated with ORS, RHF or increased liquids)	0.5	0.8	0.8	0.8	1	0.7	1	1
ANC visits to a medically trained person	0.1	0.7	0.4	0.6	0.7	0.9	0.7	1
3+ ANC visits to a medically trained person	0.1	0.7	0.3	0.6	0.7	0.7	0.2	0.2
Delivery attendance by medically trained person	0.1	0.4	0.1	0.1	0.2	0.3	0.2	0.7
Delivery attendance by a doctor	0	0.3	0.1	0.1	0.1	0.2	0.1	0.2
% of women aged 15-49 who use a modern method of contraceptive	0.1	0.4	0.5	0.6	0.7	0.2	0	0.5
% of women age 15-49 whose body mass index is < 18.5								
% of children under 5 whose height for age is below -3d z-score			24.9	58.7				
% of children under 5 whose weight for age is below -3d sd z-score			5					
% of women with atleast one daughter who have a daughter who is circumcised								
% of women age 15-49 who are circumcised								
% of women age 15-49 who have genital discharge							0.2	
% of women 15-49 who have genital ulcer								
Deaths under age 12 months per thousand live births			4	4.6				3.6
Deaths under 5 years per thousand live births			5	5.3				4
Births per women 15-49			3.9	3.4	3.1			
% of children under 5 whose height for age is between -2 to -3 sd z-score		5.6	6.3	7				

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