



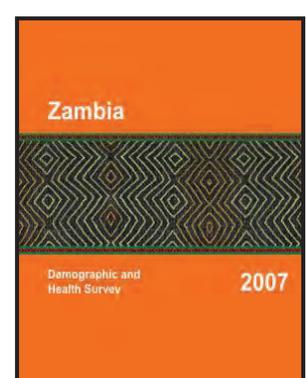
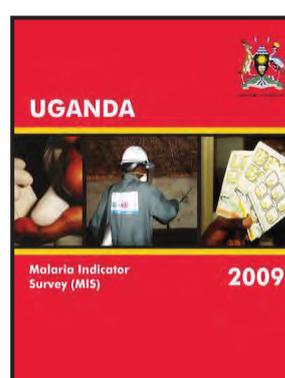
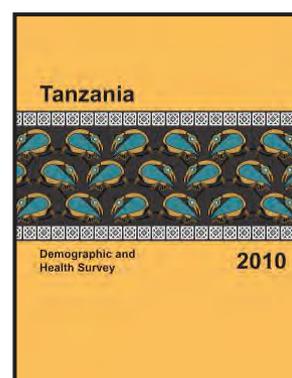
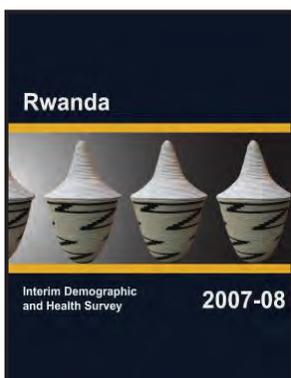
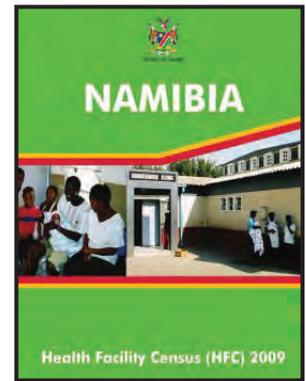
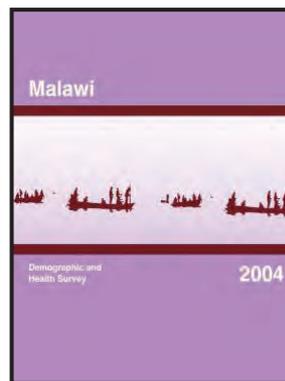
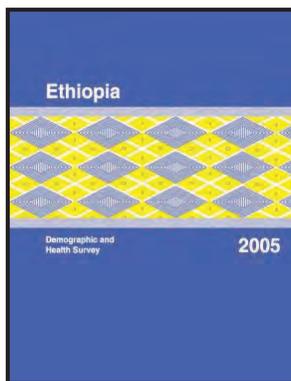
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FROM THE AMERICAN PEOPLE



# MODULE 3

## Understanding and Using the Demographic and Health Surveys

DHS Curriculum  
Facilitator's Guide  
July/August 2011



## **About the DHS Curriculum Facilitator's Guide**

The following persons (in alphabetical order) have contributed to developing, reviewing, and editing *Understanding and Using the Demographic and Health Surveys – DHS Curriculum Facilitator's Guide*: Thada Bornstein, Sarah Bradley, Anne Cross, Joy Fishel, Debbie Gachuhi, Hannah Guedenet, Kiersten Johnson, Shane Khan, Laurie Liskin, Erica Nybro, Sarah Schneider

The DHS Curriculum Facilitator's Guide is a comprehensive package of ready-made training materials about understanding and using Demographic and Health Survey reports. The curriculum is designed for use in African universities and with public health program staff. Over 25 hours of instruction are divided into seven stand-alone modules designed to be a course on its own or customized and integrated into existing curricula. Each module is complete with instructor guides, Power Point slides, exercises, handouts, pre and post tests and answer keys. The DHS Curriculum Facilitator's Guide is available in both print and electronic versions.

Questions and comments regarding the DHS Curriculum can be sent to [curriculum@measuredhs.com](mailto:curriculum@measuredhs.com)

## **About MEASURE DHS**

MEASURE DHS assists countries worldwide in the collection and use of data to monitor and evaluate population, health, and nutrition programs. Funded by the U.S. Agency for International Development (USAID) under the terms of Contract No. GPO-C-00-08-00008-00, MEASURE DHS is implemented by ICF Macro in Calverton, Maryland. The opinions expressed herein are those of the authors and do not necessarily reflect the views of the U.S. Agency for International Development.

The main objectives of the MEASURE DHS project are:

- 1) to provide decision makers in survey countries with information useful for informed policy choices
- 2) to expand the international population and health database
- 3) to advance survey methodology
- 4) to develop in participating countries the skills and resources necessary to conduct quality demographic and health surveys

Information about the MEASURE DHS project or the status of MEASURE DHS surveys is available on the Internet at <http://www.measuredhs.com> or by contacting:

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## **Suggested citation**

2011. *Understanding and Using the Demographic and Health Surveys – DHS Curriculum Facilitator's Guide: Module 3, July/August 2011*. Calverton, Maryland, USA: ICF Macro.

## Module 3: Indicators and the DHS

### PREPARATION

#### Review Instructor Guide

#### Equipment, Materials, Supplies

- LCD projector and screen
- Flipchart or writing board
- Markers
- VIPP cards or sticky notes
- PowerPoint presentation

#### Exercise Preparation

Review Exercise 3.1, *The DHS Wealth Index*

Prepare a flipchart with the following indicators written one per page:

- Percent of women who know the risk of HIV can be reduced by using condoms
- Women who know how to avoid HIV

#### Handouts

Make copies for each participant of:

- Handout 3.1, *Characteristics of a Good Indicator*
- Handout 3.2, *Examples of Indicators in the DHS*
- Handout 3.3, *International Indicators Measured in the DHS*
- Exercise 3.1, *The DHS Wealth Index*
- *The DHS Wealth Index* by Shea O. Rutstein and Kiersten Johnson. DHS Comparative Reports No. 6. Calverton, Maryland: Macro International Inc., 2004. Available at: [www.measuredhs.com/pubs/pdf/CR6/CR6.pdf](http://www.measuredhs.com/pubs/pdf/CR6/CR6.pdf)

#### Room Arrangements

Participants should be seated at tables in groups of four to seven, if possible

**PURPOSE**

This module provides an overview of indicators—what they are and why they are important. The module also explains biomarkers and the wealth index and how they are collected or measured in the DHS.

**OBJECTIVES**

By the end of the module, participants should be able to:

- Define the term “indicator”
- List population, health, and nutrition indicators collected in the DHS
- Define biomarkers
- Define the wealth index and describe how wealth is measured in the DHS

**TIME**

4 hours

**MODULE OVERVIEW**

Session 1	What is an Indicator?	1.5 hours
Session 2	Examples of Indicators Collected in the DHS	1.5 hours
Session 3	Biomarkers and Wealth	1 hour

**Session 1**

1.5 hours

**Session Objective**

**What is an Indicator?**

Define the term indicator

**STEP 1**

PRESENT **Slides 1 and 2.**

DESCRIBE the objectives for Module 3 and the focus of the three sessions.

PRESENT **Slide 3.**

EXPLAIN that the DHS collects a wide range of indicators in three major categories: population, health, and nutrition.

The DHS collects information from people about their lives and their households. It covers a wide range of topics, including family planning, number of children, literacy, child health, nutrition, etc.

All of this information gives a picture of the well-being and health-related practices of a population. One of the most important purposes of the DHS is to use all of this collected data to calculate indicators.

**EXERCISE**

DISTRIBUTE one index card to each participant. ASK them to print, legibly, a definition of the term **indicator** on the card and then hang it on the wall. Have everyone silently read all the notes. DISCUSS and SYNTHESIZE **participants'** answers to come up with a definition of indicator.

TELL participants that an indicator measures a specific aspect of a population or program. Indicators are quantitative (i.e., numerical).

**STEP 2**

PRESENT **Slide 4**

TELL participants that when an indicator is measured in the same population at different points in time, it allows planners and policymakers to measure progress towards **meeting a program's objectives.**

There are many international indicators that are agreed upon by public health organizations, national governments, international donors, etc. The MEASURE DHS project collaborates with these organizations to calculate these

**STEP 3**

indicators from DHS data. In this way the DHS helps international organizations track changes in population and health status over time.

Examples of indicators from the DHS are presented in Session 2.

PRESENT **Slide 5.**

ASK what each example is an indicator of.

Answers:

- *Grade on a test* is an indicator of student learning.
- *Rank in a class* is an indicator of a student's scores in relation to others.
- *Infant mortality rate* is an indicator of a country's health status.
- *HIV prevalence* is an indicator of the severity of the AIDS epidemic.
- *Per capita GNP* is an indicator of a country's wealth.

EXPLAIN that an indicator may be expressed as a number, ratio, percentage, mean (average), median, classification, or rate.

ASK participants for examples of each type.

GIVE these examples:

- Number of radio programs about malaria broadcast in a given month
- Ratio of boys to girls attending elementary school
- Percentage of women currently breastfeeding
- Mean time to arrive at a health facility from home
- Median age of first sexual intercourse
- Poorest group of countries (classification)
- Infant mortality rate

ASK participants if they have any questions about the definition of indicator. EXPLAIN that in the DHS almost all indicators are presented by background characteristics, such as urban and rural residence, province or region, age,

education, wealth status, and sometimes ethnic group or religion.

PRESENT **Slide 6**.

EXPLAIN that indicators help to assess a health program. They can measure progress over time (trends) and identify problems with a program.

PRESENT **Slide 7**.

EXPLAIN that one of the most critical features of an indicator is that it is clearly defined. A clear definition avoids confusion and states exactly what the indicator measures.

Indicators that are comparable across countries and across populations are most desirable. This is what the DHS provides.

Good indicators also share two additional qualities. They are:

- **Valid:** The indicator measures what it is intended to measure.
- **Reliable:** The indicator measures its target each and every time (i.e., it is reproducible).

The other characteristics listed—simple, measurable, and sensitive—are taken from **Handout 3.1**.

**EXERCISE**

TELL participants to break up into pairs. SHOW the flipchart the you prepared with the examples of two indicators:

1. Percent of women who know the risk of HIV can be reduced by using condoms
2. Women who know how to avoid HIV

ASK each pair of participants to answer the following questions:

- Which indicator is better? Why?
- How can both be improved?

Allow about 10 minutes for this, and then BRING everyone together. ASK a few pairs to share their responses with the rest of the participants.

Make sure the following points come out during discussion:

The first indicator is better because it is more specific.

It can be improved by adding an age group for women, such as “women age 15–49” or “young women age 15–24.” **Additionally, the indicator would be clearer if women’s status as married, ever-married, or sexually active were added.**

The second indicator is vague and needs several improvements. The statement, “knows how to avoid HIV,” is ambiguous. One person may think the indicator refers to abstinence, while another may think it refers to correct and consistent condom use. Therefore, this part of the indicator needs to be clarified. For example, it could be restated it as **“knows that limiting sexual intercourse to one uninfected partner reduces the risk of getting HIV.” To improve this indicator, we also should include the word “percentage”** and define the age group of the women. A better version of the indicator would read: “Percentage of women age 15–49 who know that limiting sexual intercourse to one uninfected partner reduces the risk of getting HIV.”

### STEP 4

PRESENT **Slide 8**

EXPLAIN that this slide shows goals and indicators for the **President’s Emergency Plan for AIDS Relief (PEPFAR)**.

A goal is a general statement of purpose, such as “improve maternal health.” In practice, there is often an overlap between goals and indicators. Another example is the Millennium Development Goals, which are often expressed in terms of indicators with specific measurements.

### EXERCISE

This exercise may be used for undergraduate and graduate student participants who do not have experience developing indicators.

ASK participants to break into pairs again and develop at least two indicators that would allow a program to monitor or evaluate a family planning program. You may suggest the following areas: current use of family planning, attitudes about family planning, type of family planning method used, desired number of children, etc.

### STEP 5

Allow about 10 minutes for this. After the participants are done, BRING everyone together, and ASK selected pairs to share their indicators with the rest of the participants.

ASK the participants to critique a few of the indicators presented.

End this session by ASKING participants if they have any questions about indicators and EXPLAIN that Session 2 will go into more depth about the types of topics and indicators covered in the DHS.

REMIND participants to review **Handout 3.1**, *Characteristics of a Good Indicator*, in their free time.

DISTRIBUTE **Handout 3.2** and ASK participants to read it before the next session, if time allows.

**Session 2**

1.5 hours

**Session Objective**

**Examples of Indicators Collected in the DHS**

List population, health, and nutrition indicators collected in the DHS

**STEP 1**

PRESENT **Slide 9**

TELL participants that in this session they will see examples of some of the indicators in the DHS. Stress again that the DHS collects a lot of information, some of which is used to calculate indicators.

**EXERCISE**

CONDUCT a 10-minute warm up for this session as follows:

TELL participants to work in pairs. PASS a basket holding slips of paper, each of which lists one indicator from **Handout 3.2** (you can repeat them if necessary). Have each pair take one slip. TELL participants to look in a DHS final report and find the definition of the indicator. (Make sure participants do not use Handout 3.2 to find the answers).

Before starting the exercise, PRESENT an example such as **the following. The indicator is "Educational Attainment." The definition in the DHS is "Percent of women and men age 15–49 who have received no schooling."**

ASK each pair to read their indicator and definition aloud.

**STEP 2**

PRESENT **Slide 10**

As a part of routine data collection, the DHS asks male and female respondents about their education, including the highest grade completed, number of years of schooling, and literacy.

(NOTE to instructor: The slides in this session show recent DHS data for seven countries in sub-Saharan Africa. Depending on the time, interest, and skills of the group, participants can discuss the differences between the countries listed in the tables.)

PRESENT **Slide 11**

EXPLAIN the definition of literacy in the DHS. Respondents

**STEP 3**

who have attended secondary school or more are assumed to be literate. Those who have **not** attended secondary school are also considered literate if they can read all or part of a sentence in any language.

**PRESENT Slide 12**

**EXPLAIN** that the next three slides refer to fertility and family planning, which are among the most important data collected by the DHS.

The total fertility rate (TFR) measures the average number of births a woman would have by the time she reaches age 50, if she were to give birth at the current national age-specific fertility rates. Rates are based on the three years before the survey. This avoids bias due to recall and reflects the most current information on births.

The TFR is a widely accepted indicator for monitoring family planning programs.

**PRESENT Slide 13**

**EXPLAIN** that the contraceptive prevalence rate (CPR) is a standard indicator that is widely used in reporting to donors and in measuring program impact.

Women can use a modern or traditional method to be counted in the numerator of this indicator. The denominator is currently married women age 15–49.

The contraceptive prevalence rate (CPR) traditionally refers only to currently married women; however, in many countries, women are sexually active outside of marriage. Some countries participating in the DHS project also calculate CPR among all women or among women who have been sexually active in the month before the survey.

**PRESENT Slide 14**

**EXPLAIN** that unmet need for family planning refers to the percent of women who are **not** using a method of contraception, but who do not want a child in the next two years or who want no more children. Therefore, they have a need to either space or limit their births.

This indicator highlights the gap between probable demand for contraception and actual use of contraception. A high rate of unmet need usually indicates that a country is not

providing family planning services widely enough.

**STEP 4**

PRESENT **Slide 15**

EXPLAIN that the next two slides focus on infant and child mortality.

Infant mortality is often used as a proxy indicator for a **country's development**. The infant mortality rate (IMR) is the probability of a child dying before his or her first birthday. This rate is typically reported for the five years before the survey. When data from regional or provincial levels are presented, however, the DHS calculates the IMR based on the 10-year period before the survey; this ensures that there are enough births and deaths for calculation.

PRESENT **Slide 16**

Under-five mortality is the probability of a child dying before he or she reaches his or her fifth birthday. This rate is typically reported for the five years before the survey. The data used in the estimations are collected in the birth history section of the **Woman's** Questionnaire.

**STEP 5**

PRESENT **Slide 17**

EXPLAIN that the next two slides focus on maternal health.

Receiving antenatal care from a skilled provider is an important indicator of access to maternal health care. A skilled provider can mean a doctor, nurse, midwife, or auxiliary nurse/midwife, but the exact definition depends on the country.

TELL participants that some DHS surveys calculate antenatal care based on women who gave birth in the three years before the survey, rather than the usual five years.

PRESENT **Slide 18**

EXPLAIN that whether a woman delivers in a health facility is an important element in preventing maternal and newborn deaths.

ASK why it is important for a woman to deliver in a health facility. Answer: There is a better chance of having a skilled birth attendant and other resources at a health facility versus giving birth at home. A higher-level facility, such as a hospital, is likely to have more resources than a health facility or health post.

Some surveys break down the results by private versus public facilities.

Another commonly used indicator based on DHS data is the percent of deliveries assisted by a skilled or trained provider.

**STEP 6**

PRESENT **Slide 19**

EXPLAIN that the DHS also collects information on the health of children, including information on vaccinations and the incidence of fever and acute respiratory infection.

One of the goals of many national health programs is to fully vaccinate children before they are one year old.

**“Fully vaccinated” or “all basic vaccinations” means that a child has received all of the following:**

- BCG (helps prevent tuberculosis)
- Measles
- Three doses of polio vaccine (excluding polio given at birth)
- Three doses each of DPT (combination of antigens for diphtheria, pertussis or whooping cough, and tetanus) **OR** of a pentavalent vaccine used in some countries that combines antigens for diphtheria, pertussis, and tetanus with hepatitis B and *haemophilus influenza* type b (Hib)

PRESENT **Slide 20**

EXPLAIN that respiratory illness is another major source of morbidity in children. The DHS collects information that can be used to indirectly identify acute respiratory infection (ARI). The indicator commonly used is the percent of children under age five who have symptoms of ARI in the two weeks before the survey. The symptoms of ARI are cough accompanied by short, rapid breathing. Symptoms

of ARI are considered a proxy for pneumonia.

Similar information is collected to measure the prevalence of fever and diarrhea among children. Both of these indicators also use the two-week time restriction in order to reduce recall bias among respondents.

**STEP 7****PRESENT SLIDE 21**

TELL participants that the next five slides focus on child and adult nutrition.

The DHS collects information on the nutritional status of children and adults.

In Africa, most children are breastfed. Breastfeeding is an important source of nutrients during the first two years of life. The DHS measures the percent of children exclusively breastfed for the first six months of life, which is recommended by the World Health Organization.

**PRESENT SLIDE 22**

ASK participants to define "stunting." Answer: Stunted children are too short for their age. Stunting is an indicator of chronic malnutrition in a population.

EXPLAIN that the DHS collects information **on children's** weight as well as height. This lets us calculate the percent of children who are underweight (that is, too thin for their age) or wasted (that is, too thin for their height).

**PRESENT Slide 23**

EXPLAIN that people need vitamin A to resist infection and to prevent eye damage from vitamin A deficiency (VAD). VAD can increase the severity of illness and slow recovery. The DHS measures vitamin A supplementation (1) in the six months before the survey among children age 6 to 59 months and (2) among women with a child who was born in the past five years.

**PRESENT Slide 24**

EXPLAIN that one of the most widely used measures of health in adults is the body mass index or BMI. BMI is the

ratio of weight in kilograms to the square of height in meters.

Among pregnant women, extremely low or extremely high BMI is a risk factor for poor birth outcomes and delivery complications.

Overweight and obesity among both men and women are growing problems in the developing world and are associated with health problems such as diabetes and heart disease.

It is not necessary to discuss the BMI categories defined below unless people ask about them, because conceptualizing body sizes from BMI is impossible unless you also show the corresponding ranges of weights and heights. Alternatively, you could ask participants to calculate their own BMI.

BMI categories for adults are as follows:

- Underweight:  $< 18.5$
- Normal:  $18.5 - 24.9$
- Overweight:  $25.0 - 29.9$
- **Obese:  $\geq 30.0$**

PRESENT **Slide 25**

EXPLAIN that levels of anemia, as measured by blood hemoglobin, are another indicator of nutrition.

For pregnant women, the hemoglobin count defining mild anemia is adjusted from 10.0 to 10.9 grams per deciliter (g/dl). The hemoglobin counts defining anemia are also adjusted for altitude and for smoking status, both of which are known to affect anemia levels.

**STEP 8**

PRESENT **Slide 26**

EXPLAIN that in much of sub-Saharan Africa, malaria is one of the leading causes of mortality. The DHS collects information that can be used to monitor malaria control programs, including information on the possession and use of mosquito nets, treatment with antimalarial drugs, indoor residual spraying, and, in some countries, the presence of malaria parasites in the blood.

The DHS counts all nets of insecticide-treated nets, called ITNs, in each household. Information is collected on the type, age, treatment, and use of the nets. The most common household indicator is the percent of households with at least one ITN.

**PRESENT Slide 27**

TELL participants that the DHS collects information on which members of a household slept under a mosquito net the night before the survey. A common indicator is the percent of children under age five who slept under an ITN the night before the survey. Recently, international organizations recommended adding more indicators, such as the number of nets per household and the number of people in a household who slept underneath a net. This is because some studies have found that the more people in a household who are protected from mosquito bites, the lower the risk of anyone in the household getting malaria.

**PRESENT Slide 28**

EXPLAIN that the DHS also collects information on the use of intermittent preventive treatment (IPT) with antimalarial drugs during pregnancy. In most countries, recommended IPT for pregnant women is two or more doses of SP/Fansidar given during ANC visits. Preventing malaria during pregnancy is important because malaria during pregnancy contributes to low birth weights and stillbirths.

**STEP 9**

**PRESENT Slide 29**

EXPLAIN that one of the major contributions of the DHS is providing nationally-representative data on HIV/AIDS knowledge, attitudes, behaviors, and, in some cases, HIV prevalence. The HIV/AIDS indicators are used extensively for monitoring and evaluating prevention programs at the national level and were developed jointly with UNAIDS, the **President's Emergency Plan for AIDS Relief (PEPFAR)**, and the UN General Assembly Special Session on HIV and AIDS (UNGASS).

TELL participants that specific examples of HIV/AIDS indicators will be covered in Module 6.

**STEP 10**PRESENT **Slide 30**

EXPLAIN that **women's empowerment is associated with positive demographic and health outcomes for women and their children. One of the indicators of women's empowerment is the percentage of currently married women who were employed and earned cash in the past 12 months.**

PRESENT **Slide 31**

EXPLAIN that another indicator **of women's empowerment** is the percent of currently married women who are empowered to make decisions on their own health care, either by themselves or jointly with their husbands.

PRESENT **Slide 32**

EXPLAIN that the DHS has a special module on gender-based violence that can be added to a standard survey. The module was originally designed to be used only with women respondents. However, several countries are now **including questions about men's experiences with domestic violence.** The module includes questions for respondents on whether they have experienced spousal violence and, if so, what forms.

Due to the sensitivity of the subject and the need to protect the security of the respondents, interviewers ensure complete privacy before completing the gender-based violence module. Only one spouse per household is asked about domestic violence.

**STEP 11**

TELL participants that they can check the *DHS Guide for Statistics* at the MEASURE DHS website ([www.measureDHS.com](http://www.measureDHS.com)) for precise explanations on how data is collected and how indicators are calculated.

DISTRIBUTE **Handout 3.3** and EXPLAIN that the DHS collects data that allow policymakers to track internationally agreed upon indicators, such as those used for the Millennium Development Goals (MDGs) and by UNAIDS. Give participants a few minutes to skim the handout and ask any questions they might have.

**Session 3**

1 hour

**Session Objectives**

**Biomarkers and Wealth**

Define biomarkers

Define the wealth index and describe how wealth is measured in the DHS

**STEP 1**

If participants have been sitting a long time or if this session directly follows Session 2, CONDUCT an energizer before starting.

PRESENT **Slide 33**

WRITE the term **biomarker** on the flipchart and ASK participants if they can define this term or give an example of a biomarker.

**STEP 2**

PRESENT **Slide 34**

EXPLAIN that the term **biomarker** refers to biological measures of health conditions. The DHS has successfully included biomarkers in many of its surveys. The earliest example of biomarkers is the collection of height and weight data from children.

DESCRIBE these examples of biomarkers for which data have been collected in the DHS (the biomarkers are in bold text):

- *Nutrition:* **hemoglobin** (for anemia), **serum retinol** (for vitamin A), **anthropometry** (height and weight measurements)
- *Adult health:* **Blood pressure**, **lipids** (cholesterol)
- *Sexually transmitted infections (STIs):* **HIV**, Chlamydia, gonorrhea, syphilis, and herpes
- *Malaria:* testing for **malaria parasites**

Biomarkers can complement self-reported data and provide an objective measure of health status. For example, the success of a vitamin A supplementation program can be assessed by testing serum retinol levels in the population. But in most cases, biomarkers collected in the DHS do not complement self-reported data (i.e. questionnaires do not ask for self-reported data on anemia). Biomarkers also contribute to the understanding of factors and

determinants of different illnesses by linking health **outcomes to the respondents' characteristics**. Biomarkers help to evaluate programs.

In addition to collecting biomarkers, or biological data, from respondents, the DHS tests salt in many countries for iodine content. Many countries require that iodine be added to salt to ensure that people get enough iodine in their diet. Insufficient iodine can cause mental retardation, stillbirths, and other problems during pregnancy and can cause abnormal growth of the thyroid gland, also called a goiter.

PRESENT **Slide 35**

EXPLAIN that anthropometry is an inexpensive and noninvasive measure of the general nutritional status of an individual or a population. There are four main elements in using anthropometry as an indicator of nutrition: age, sex, weight, and length/height. The DHS measures all four.

PRESENT **Slide 36**

EXPLAIN that the three most common anthropometrical measurements are height-for-age (stunting), weight-for-height (wasting), and weight-for-age (underweight). As discussed in Module 2, the WHO Child Growth Standards are used to measure where children in a specific country fall in comparison with a standard reference population of children from around the world.

PRESENT **Slide 37**

EXPLAIN that the DHS uses specially prepared boards to measure the height of children. Interviewers are trained for several days on taking accurate measurements to be sure that they measure children the same way, so heights and weights are comparable within a country and across countries.

PRESENT **Slide 38**

EXPLAIN that the HemoCue device shown in the photos on this slide is the most commonly used device for measuring hemoglobin levels in the field. The device is easy to

transport and provides results within one minute.

**PRESENT Slide 39**

EXPLAIN that, as mentioned earlier, malaria is a major cause of illness in Africa. DHS is a partner in Roll Back Malaria, a major international consortium that seeks to eliminate malaria worldwide. Malaria testing in the DHS provides a good objective measure of actual malaria infection. Unlike other illnesses tested in the DHS, however, malaria is seasonal, so survey results may differ depending on the time of year the data are collected.

Testing for malaria in the DHS is most commonly done using rapid diagnostic test (RDT) kits. Microscopy, or slides, is used in addition to RDT kits to validate the results.

During the survey, children and adults who are tested and found to be infected with malaria parasites are treated with nationally recommended drugs and are also referred to health centers for follow-up treatment.

**PRESENT Slide 40**

These photos illustrate an RDT kit.

**STEP 3**

TELL participants that DHS also collects information on wealth as part of their health surveys. DISCUSS ways in which the participants think wealth and poverty might impact health.

**PRESENT Slide 41**

The DHS has created a measure of relative wealth known as the Wealth Index. The Wealth Index lets us analyze the impact of wealth on health outcomes, health services, and the reach of public health services using DHS data. Many programs use geographical criteria to target their activities, and being able to map poverty or wealth is important.

DISCUSS with participants the principal uses for a measure of economic status with regard to health programs. Make sure the following point is addressed:

- Access to certain health programs may be related to the ability to pay a fee for health services.

PRESENT **Slide 42**

TELL participants that the most common ways for surveys to measure wealth are to assess how much income a household receives and how the household spends its money. However, this can be time-consuming and expensive to do. In areas where people are not paid in hard currency or where jobs are transient, it is even more difficult to carry out. This is why the DHS developed a different approach to measuring wealth.

PRESENT **Slide 43**

ASK participants for to define a **proxy indicator**. Answer: A proxy takes the place of, or stands in for, something else. In this case, the DHS uses other factors (or proxies) to calculate wealth.

EXPLAIN that the DHS measures wealth based on (1) household ownership of durable goods like radios and bicycles; (2) household access to water and sanitary facilities; and (3) the materials used in house construction.

ASK what a quintile is and what percentage of the population a quintile contains. Answer: One-fifth of the population, or 20%.

In each country, the population is divided into five equal groups, called quintiles, ranging from the lowest or least well-off to the highest or most well-off. The five quintiles are called Lowest, Second, Middle, Fourth, and Highest.

People in the highest wealth quintile in a country are rich only in relation to other people in the same country. Thus, people in the highest wealth quintile in South Africa will not have the same level of wealth as people in the highest wealth quintile in Niger.

DISCUSS what this might mean if you are trying to compare your country to another country.

PRESENT **Slide 44**

The wealth index lets us compare one **household's wealth** with other households in the same country. It does not define poverty the way that a country might do, for example, by measuring the percent of the population living

below a certain income. The wealth index provides a ranking of households by wealth.

PRESENT *either Slide 45 or 46*

These two slides provide two slightly different explanations of how to construct the wealth index. Chose whichever definition is appropriate for participants' **knowledge level**. Slide 45 is simpler than Slide 46.

For participants who are interested, DISTRIBUTE copies of the *Wealth Index* publication by Rutstein and Johnson.

**EXERCISE**

TELL participants to divide themselves into groups of three.

DISTRIBUTE **Exercise 3.1, *The DHS Wealth Index***, and give the groups about 10 minutes to complete the exercise.

After they are done, BRING everyone together and PRESENT **Slides 47 and 48**. DISCUSS the following questions with the participants:

1. What do these two graphs show about wealth?
2. Why is the Wealth Index important for public health interventions and health communication campaigns?

Make sure the following points are made:

- Health practices and health status often vary by wealth.
- In both examples, health practices are positively correlated with wealth; that is, as wealth increases, contraceptive use and trained assistance at childbirth also increase. This is true in many countries.
- The wealth index helps explore differences in access to health care.
- The wealth index can help identify populations with special needs. In Nigeria, for example, children from the wealthiest households are 13 times more likely to be vaccinated than children from the poorest households.

**STEP 4**

End this session by ASKING participants if they have any questions or comments on biomarkers or the wealth index.

REMIND participants that a copy of the *DHS Wealth Index* report, which provides in-depth information on the construction and use of the Wealth Index, is available.



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# Module 3

Indicators  
and the DHS

## Objectives for Module 3

By the end of this module, participants should be able to:

- Define the term “indicator”
- List major topics and indicators collected in the DHS
- Define biomarkers
- Define the wealth index and describe how wealth is measured in the DHS.

Module 3, Slide 2

DESCRIBE the objectives for Module 3 and the focus of the three sessions.

# Module 3

## Session 1

### What is an Indicator?

EXPLAIN that the DHS collects a wide range of indicators in three major categories: population, health, and nutrition.

The DHS collects information from people about their lives and their households. It covers a wide range of topics, including family planning, number of children, literacy, child health, nutrition, etc.

All of this information gives a picture of the well-being and health-related practices of a population. One of the most important purposes of the DHS is to use all of this collected data to calculate indicators.

## What is an Indicator?

- An indicator is a statistic that measures a specific aspect of a population, program, or program objectives, activities, and outcomes
- Changes in indicators provide evidence about the achievement or lack of achievement of results and activities
- Indicators are items measured at different points in time to determine if conditions have changed, in other words, to identify trends

Module 3, Slide 4

TELL participants that when an indicator is measured in the same population at different points in time, it allows planners and policymakers to measure progress towards meeting a program's objectives.

There are many international indicators that are agreed upon by public health organizations, national governments, international donors, etc. The MEASURE DHS project collaborates with these organizations to calculate these indicators from DHS data. In this way the DHS helps international organizations track changes in population and health status over time.

Examples of indicators from the DHS are presented in Session 2.

## Common Indicators

- Grade on a test
- Rank in a class
- Infant mortality rate
- HIV prevalence
- Per capita GNP

An indicator may be a

- number
- ratio
- percent
- mean
- median
- classification
- rate
- rank

Module 3, Slide 5

ASK what each example is an indicator of.

Answers:

*Grade on a test* is an indicator of student learning.

*Rank in a class* is an indicator of a student's scores in relation to others.

*Infant mortality rate* is an indicator of a country's health status.

*HIV prevalence* is an indicator of the severity of the AIDS epidemic.

*Per capita GNP* is an indicator of a country's wealth.

EXPLAIN that an indicator may be expressed as a number, ratio, percentage, mean (average), median, classification, or rate.

ASK participants for examples of each type.

GIVE these examples:

Number of radio programs about malaria broadcast in a given month

Ratio of boys to girls attending elementary school

Percentage of women currently breastfeeding

Mean time to arrive at a health facility from home

Median age of first sexual intercourse

Poorest group of countries (classification)

Infant mortality rate

ASK participants if they have any questions about the definition of indicator. EXPLAIN that in the DHS almost all indicators are presented by background characteristics, such as urban and rural residence, province or region, age, education, wealth status, and sometimes ethnic group or religion.

## Why are Indicators Important?

- Indicators serve as tools to examine trends and highlight problems (e.g., tracking condom distribution each month over the course of a year)
- Indicators can be compared to program targets or goals to:
  - Signal the need for corrective management action
  - Evaluate the effectiveness of various management actions
  - Provide evidence on whether objectives are being achieved

Module 3, Slide 6

EXPLAIN that indicators help to assess a health program. They can measure progress over time (trends) and identify problems with a program.

## Characteristics of DHS Indicators

- Clearly defined
  - Generally comparable among countries and within countries over time
  - Accepted internationally
- ALSO
- Simple
  - Measurable
  - Valid
  - Reliable
  - Variable
  - Sensitive

Module 3, Slide 7

EXPLAIN that one of the most critical features of an indicator is that it is clearly defined. A clear definition avoids confusion and states exactly what the indicator measures.

Indicators that are comparable across countries and across populations are most desirable. This is what the DHS provides.

Good indicators also share two additional qualities. They are:

*Valid:* The indicator measures what it is intended to measure.

*Reliable:* The indicator measures its target each and every time (i.e., it is reproducible).

The other characteristics listed—simple, measurable, and sensitive—are taken from **Handout 3.1**.

## PEPFAR Goals and Selected Indicators

PEPFAR is the President's Emergency Plan for AIDS Relief

### Goals:

- Treat 2 million HIV+ people (by 2008)
- Prevent 7 million new infections
- Care for 10 million HIV-infected and affected individuals (by 2008), including orphans and vulnerable children

### Sample indicators:

- Total number of service outlets providing HIV prevention services related to behavior change, medical transmission, and STI management
- Total number of persons trained to provide HIV prevention services

Module 3, Slide 8

EXPLAIN that this slide shows goals and indicators for the President's Emergency Plan for AIDS Relief (PEPFAR).

A goal is a general statement of purpose, such as "improve maternal health." In practice, there is often an overlap between goals and indicators. Another example is the Millennium Development Goals, which are often expressed in terms of indicators with specific measurements.

# **Module 3**

## **Session 2**

### **Examples of Indicators Collected in the DHS**

TELL participants that in this session they will see examples of some of the indicators in the DHS. Stress again that the DHS collects a lot of information, some of which is used to calculate indicators.

## Educational Attainment

**No education:** Percent of female and male respondents age 15-49 who have received no schooling

Country	Women	Men
Ethiopia DHS 2005	66%	43%
Kenya DHS 2008-09	9%	3%
Namibia DHS 2006-07	7%	9%
Rwanda DHS 2007-08	22%	15%
Tanzania DHS 2010	19%	10%
Uganda DHS 2006	19%	5%
Zambia DHS 2007	10%	5%

Module 3, Slide 10

As a part of routine data collection, the DHS asks male and female respondents about their education, including the highest grade completed, number of years of schooling, and literacy.

(NOTE to instructor: The slides in this session show recent DHS data for seven countries in sub-Saharan Africa. Depending on the time, interest, and skills of the group, participants can discuss the differences between the countries listed in the tables.)

## Literacy

**Literacy:** Percent of women and men age 15-49 who are literate (i.e., attended secondary school or higher or can read a whole sentence or part of a sentence)

Country	Women	Men
Ethiopia DHS 2005	29%	59%
Kenya DHS 2008-09	85%	91%
Namibia DHS 2006-07	91%	89%
Rwanda DHS 2005*	70%	78%
Tanzania DHS 2010	72%	82%
Uganda DHS 2006	56%	83%
Zambia DHS 2007	64%	82%

Module 3, Slide 11

EXPLAIN the definition of literacy in the DHS. Respondents who have attended secondary school or more are assumed to be literate. Those who have **not** attended secondary school are also considered literate if they can read all or part of a sentence in any language.

\*Note: Rwanda DHS 2005 is referenced because data for this indicator is not provided in Rwanda DHS 2007-08.

## Fertility

**Total fertility rate (TFR):** Average number of births a woman would have by the time she reaches age 50, if she were to give birth at the current age-specific fertility rates

Country	TFR
Ethiopia DHS 2005	5.4
Kenya DHS 2008-09	4.6
Namibia DHS 2006-07	3.6
Rwanda DHS 2007-08	5.5
Tanzania DHS 2010	5.4
Uganda DHS 2006	6.7
Zambia DHS 2007	6.2

Module 3, Slide 12

EXPLAIN that the next three slides refer to fertility and family planning, which are among the most important data collected by the DHS.

The total fertility rate (TFR) measures the average number of births a woman would have by the time she reaches age 50, if she were to give birth at the current national age-specific fertility rates. Rates are based on the three years before the survey. This avoids bias due to recall and reflects the most current information on births.

The TFR is a widely accepted indicator for monitoring family planning programs.

## Family Planning

**Contraceptive prevalence:** Percent of married women age 15-49 who are currently using any method of contraception

Country	Contraceptive Prevalence
Ethiopia DHS 2005	15%
Kenya DHS 2008-09	46%
Namibia DHS 2006-07	55%
Rwanda DHS 2007-08	36%
Tanzania DHS 2010	34%
Uganda DHS 2006	24%
Zambia DHS 2007	41%

Module 3, Slide 13

EXPLAIN that the contraceptive prevalence rate (CPR) is a standard indicator that is widely used in reporting to donors and in measuring program impact.

Women can use a modern or traditional method to be counted in the numerator of this indicator. The denominator is currently married women age 15–49.

The contraceptive prevalence rate (CPR) traditionally refers only to currently married women; however, in many countries, women are sexually active outside of marriage. Some countries participating in the DHS project also calculate CPR among all women or among women who have been sexually active in the month before the survey.

## Unmet Need for Family Planning

**Unmet need for family planning:** Percent of married women who are not currently using a method of contraception but do not want a child in the next two years or who do not want another child

Country	Unmet need
Ethiopia DHS 2005	34%
Kenya DHS 2008-09	26%
Namibia DHS 2006-07	7%
Rwanda DHS 2005*	38%
Tanzania DHS 2010	25%
Uganda DHS 2006	41%
Zambia DHS 2007	27%

Module 3, Slide 14

EXPLAIN that unmet need for family planning refers to the percent of women who are **not** using a method of contraception, but who do not want a child in the next two years or who want no more children. Therefore, they have a need to either space or limit their births.

This indicator highlights the gap between probable demand for contraception and actual use of contraception. A high rate of unmet need usually indicates that a country is not providing family planning services widely enough.

\*Note: Rwanda DHS 2005 is referenced because data for this indicator is not provided in Rwanda DHS 2007-08.

## Infant Mortality

**Infant mortality rate (IMR):** Number of deaths among infants under age 12 months per 1,000 live births (for the five years before the survey)

Country	Infant Mortality Rate
Ethiopia DHS 2005	77
Kenya DHS 2008-09	52
Namibia DHS 2006-07	46
Rwanda DHS 2007-08	62
Tanzania DHS 2010	51
Uganda DHS 2006	76
Zambia DHS 2007	70

Module 3, Slide 15

EXPLAIN that the next two slides focus on infant and child mortality.

Infant mortality is often used as a proxy indicator for a country's development. The infant mortality rate (IMR) is the probability of a child dying before his or her first birthday. This rate is typically reported for the five years before the survey. When data from regional or provincial levels are presented, however, the DHS calculates the IMR based on the 10-year period before the survey; this ensures that there are enough births and deaths for calculation.

## Under-Five Mortality

**Under-five mortality rate:** Number of children dying between birth and age five per 1,000 live births (for the five years before the survey)

Country	Under-5 Mortality Rate
Ethiopia DHS 2005	123
Kenya DHS 2008-08	74
Namibia DHS 2006-07	69
Rwanda DHS 2007-08	103
Tanzania DHS 2010	81
Uganda DHS 2006	137
Zambia DHS 2007	119

Module 3, Slide 16

Under-five mortality is the probability of a child dying before he or she reaches his or her fifth birthday. This rate is typically reported for the five years before the survey. The data used in the estimations are collected in the birth history section of the Woman's Questionnaire.

## Maternal Health: Antenatal Care

**Antenatal care (ANC):** Percent of live births in the five years before the survey to women age 15-49 for which ANC from a skilled provider (doctor, nurse, midwife, or auxiliary nurse/midwife) was obtained

Country	Antenatal care
Ethiopia DHS 2005	28%
Kenya DHS 2008-09	92%
Namibia DHS 2006-07	95%
Rwanda DHS 2007-08	96%
Tanzania DHS 2010	96%
Uganda DHS 2006	94%
Zambia DHS 2007	94%

Module 3, Slide 17

EXPLAIN that the next two slides focus on maternal health.

Receiving antenatal care from a skilled provider is an important indicator of access to maternal health care. A skilled provider can mean a doctor, nurse, midwife, or auxiliary nurse/midwife, but the exact definition depends on the country.

TELL participants that some DHS surveys calculate antenatal care based on women who gave birth in the three years before the survey, rather than the usual five years.

## Maternal Health: Delivery

**Place of delivery:** Percent of live births delivered in a health facility in the five years before the survey

Country	Delivery in a health facility
Ethiopia DHS 2005	5%
Kenya DHS 2008-09	44%
Namibia DHS 2006-07	81%
Rwanda DHS 2007-09	45%
Tanzania DHS 2010	50%
Uganda DHS 2006	42%
Zambia DHS 2007	48%

Module 3, Slide 18

EXPLAIN that whether a woman delivers in a health facility is an important element in preventing maternal and newborn deaths.

ASK why it is important for a woman to deliver in a health facility. Answer: There is a better chance of having a skilled birth attendant and other resources at a health facility versus giving birth at home. A higher-level facility, such as a hospital, is likely to have more resources than a health facility or health post.

Some surveys break down the results by private versus public facilities.

Another commonly used indicator based on DHS data is the percent of deliveries assisted by a skilled or trained provider.

## Child Health: Immunization

**Full vaccination:** Percent of children age 12-23 months who received all basic vaccinations at any time before the survey

Country	Fully vaccinated
Ethiopia DHS 2005	20%
Kenya DHS 2008-09	77%
Namibia DHS 2006-07	69%
Rwanda DHS 2007-08	80%
Tanzania DHS 2010	75%
Uganda DHS 2006	46%
Zambia DHS 2007	68%

Module 3, Slide 19

EXPLAIN that the DHS also collects information on the health of children, including information on vaccinations and the incidence of fever and acute respiratory infection.

One of the goals of many national health programs is to fully vaccinate children before they are one year old.

“Fully vaccinated” or “all basic vaccinations” means that a child has received all of the following:

- BCG (helps prevent tuberculosis)
- Measles
- Three doses of polio vaccine (excluding polio given at birth)
- Three doses each of DPT (combination of antigens for diphtheria, pertussis or whooping cough, and tetanus) **OR** of a pentavalent vaccine used in some countries that combines antigens for diphtheria, pertussis, and tetanus with hepatitis B and *haemophilus influenzae* type b (Hib)

## Child Health: Acute Respiratory Infection

Acute respiratory infection (ARI): Among children under age five, percent who have symptoms of ARI in the two weeks before the survey

Country	Prevalence of ARI
Ethiopia DHS 2005	13%
Kenya DHS 2008-09	8%
Namibia DHS 2006-07	4%
Rwanda DHS 2007-08	15%
Tanzania DHS 2010	4%
Uganda DHS 2006	15%
Zambia DHS 2007	5%

Module 3, Slide 20

EXPLAIN that respiratory illness is another major source of morbidity in children. The DHS collects information that can be used to indirectly identify acute respiratory infection (ARI). The indicator commonly used is the percent of children under age five who have symptoms of ARI in the two weeks before the survey. The symptoms of ARI are cough accompanied by short, rapid breathing. Symptoms of ARI are considered a proxy for pneumonia.

Similar information is collected to measure the prevalence of fever and diarrhea among children. Both of these indicators also use the two-week time restriction in order to reduce recall bias among respondents.

## Child Nutrition: Breastfeeding

**Breastfeeding:** Percent of children born in the five years preceding the survey who were ever breastfed

Country	Ever breastfed
Ethiopia DHS 2005	96%
Kenya DHS 2008-09	97%
Namibia DHS 2006-07	94%
Rwanda DHS 2007-08	98%
Tanzania DHS 2010	97%
Uganda DHS 2006	98%
Zambia DHS 2007	98%

Module 3, Slide 21

TELL participants that the next five slides focus on child and adult nutrition.

The DHS collects information on the nutritional status of children and adults.

In Africa, most children are breastfed. Breastfeeding is an important source of nutrients during the first two years of life. The DHS measures the percent of children exclusively breastfed for the first six months of life, which is recommended by the World Health Organization.

## Child Nutrition: Stunting

**Stunting:** Percent of children under age five who are stunted (too short for their age)

Country	Stunting
Ethiopia DHS 2005**	51%
Kenya DHS 2008-09	35%
Namibia DHS 2006-07	29%
Rwanda DHS 2005*	51%
Tanzania DHS 2010	42%
Uganda DHS 2006	38%
Zambia DHS 2007**	45%

Module 3, Slide 22

ASK participants to define “stunting.” Answer: Stunted children are too short for their age. Stunting is an indicator of chronic malnutrition in a population.

EXPLAIN that the DHS collects information on children’s weight as well as height. This lets us calculate the percent of children who are underweight (that is, too thin for their age) or wasted (that is, too thin for their height).

\*Note: Rwanda DHS 2005 is referenced because data for this indicator is not provided in Rwanda DHS 2007-08.

\*\*Note: The figures differ from the final reports because they are based on 2006 WHO Child Growth standards. More information is provided in *Nutrition Update 2010*.

## Child Nutrition: Vitamin A

**Vitamin A supplementation:** Percent of children age 6-59 months who were given vitamin A supplements in the six months before the survey

Country	Vitamin A supplementation
Ethiopia DHS 2005	46%
Kenya DHS 2008-09	30%
Namibia DHS 2006-07	52%
Rwanda DHS 2007-08	72%
Tanzania DHS 2010	61%
Uganda DHS 2006	36%
Zambia DHS 2007	60%

Module 3, Slide 23

EXPLAIN that people need vitamin A to resist infection and to prevent eye damage from vitamin A deficiency (VAD). VAD can increase the severity of illness and slow recovery. The DHS measures vitamin A supplementation (1) in the six months before the survey among children age 6 to 59 months and (2) among women with a child who was born in the past five years.

## Adult Nutrition: Under- and Overweight

**Body mass index (BMI):** Percent of women who are underweight or overweight or obese, based on the ratio of weight (kg) to the square of height (m)

Country	Underweight	Overweight or obese
Ethiopia DHS 2005	27%	4%
Kenya DHS 2008-09	12%	25%
Namibia DHS 2006-07	16%	28%
Rwanda DHS 2005*	10%	12%
Tanzania DHS 2010	11%	22%
Uganda DHS 2006	12%	17%
Zambia DHS 2007	10%	19%

Module 3, Slide 24

\*Note: Rwanda DHS 2005 is referenced because data for this indicator is not provided in Rwanda DHS 2007-08.

EXPLAIN that one of the most widely used measures of health in adults is the body mass index or BMI. BMI is the ratio of weight in kilograms to the square of height in meters.

Among pregnant women, extremely low or extremely high BMI is a risk factor for poor birth outcomes and delivery complications.

Overweight and obesity among both men and women are growing problems in the developing world and are associated with health problems such as diabetes and heart disease.

It is not necessary to discuss the BMI categories defined below unless people ask about them, because conceptualizing body sizes from BMI is impossible unless you also show the corresponding ranges of weights and heights. Alternatively, you could ask participants to calculate their own BMI.

BMI categories for adults are as follows:

- Underweight: <18.5
- Normal: 18.5 - 24.9
- Overweight: 25.0 – 29.9
- Obese: ≥ 30.0

## Adult Nutrition: Anemia

**Anemia:** Percent of nonpregnant women whose blood hemoglobin level was less than 12 grams per deciliter (g/dl)

Country	Any anemia
Ethiopia DHS 2005	27%
Kenya DHS 2008-09	NA
Namibia DHS 2006-07	NA
Rwanda DHS 2007-08	27%
Tanzania DHS 2010	40%
Uganda DHS 2006	41%
Zambia DHS 2007	NA

Module 3, Slide 25

EXPLAIN that levels of anemia, as measured by blood hemoglobin, are another indicator of nutrition.

For pregnant women, the hemoglobin count defining mild anemia is adjusted from 10.0 to 10.9 grams per deciliter (g/dl). The hemoglobin counts defining anemia are also adjusted for altitude and for smoking status, both of which are known to affect anemia levels.

## Malaria: Insecticide-treated Nets (ITNs)

Ownership of insecticide-treated nets (ITN):  
Percent of households with at least one ITN

Country	Possession of ITNs
Ethiopia DHS 2005	3%
Kenya DHS 2008-09	56%
Namibia DHS 2006-07	20%
Rwanda DHS 2007-08	57%
Tanzania DHS 2010	64%
Uganda DHS 2006	16%
Zambia DHS 2007	53%

Module 3, Slide 26

EXPLAIN that in much of sub-Saharan Africa, malaria is one of the leading causes of mortality. The DHS collects information that can be used to monitor malaria control programs, including information on the possession and use of mosquito nets, treatment with antimalarial drugs, indoor residual spraying, and, in some countries, the presence of malaria parasites in the blood.

The DHS counts all nets of insecticide-treated nets, called ITNs, in each household. Information is collected on the type, age, treatment, and use of the nets. The most common household indicator is the percent of households with at least one ITN.

## Malaria: Children's Use of ITNs

Use of insecticide-treated nets (ITN) by children: Percent of children under age five who slept under an ITN the night before the survey

Country	Use of ITNs
Ethiopia DHS 2005	2%
Kenya DHS 2008-09	47%
Namibia DHS 2006-07	12%
Rwanda DHS 2007-08	58%
Tanzania DHS 2010	64%
Uganda DHS 2006	10%
Zambia DHS 2007	29%

Module 3, Slide 27

TELL participants that the DHS collects information on which members of a household slept under a mosquito net the night before the survey. A common indicator is the percent of children under age five who slept under an ITN the night before the survey. Recently, international organizations recommended adding more indicators, such as the number of nets per household and the number of people in a household who slept underneath a net. This is because some studies have found that the more people in a household who are protected from mosquito bites, the lower the risk of anyone in the household getting malaria.

## Malaria: Intermittent Preventive Treatment

Use of intermittent preventive treatment (IPT):  
Percent of women age 15-49 with a live birth in the two years preceding the survey who took at least two doses of a recommended antimalarial drug during ANC visits

Country	Use of IPT
Ethiopia DHS 2005	0.3%
Kenya DHS 2008-09	14%
Namibia DHS 2006-07	10%
Rwanda DHS 2007-08	17%
Tanzania DHS 2010	26%
Uganda DHS 2006	16%
Zambia DHS 2007	63%

Module 3, Slide 28

EXPLAIN that the DHS also collects information on the use of intermittent preventive treatment (IPT) with antimalarial drugs during pregnancy. In most countries, recommended IPT for pregnant women is two or more doses of SP/Fansidar given during ANC visits. Preventing malaria during pregnancy is important because malaria during pregnancy contributes to low birth weights and stillbirths.

## HIV / AIDS

- The DHS provides nationally-representative data on HIV/AIDS knowledge, attitudes, and behaviors. Some countries also collect estimates of HIV prevalence.
- Indicators were developed in coordination with UNAIDS, the President's Emergency Plan for AIDS Relief (PEPFAR), and the United Nations General Assembly Special Session on HIV and AIDS (UNGASS). They are used for monitoring and evaluating HIV prevention programs.

Module 3, Slide 29

EXPLAIN that one of the major contributions of the DHS is providing nationally-representative data on HIV/AIDS knowledge, attitudes, behaviors, and, in some cases, HIV prevalence. The HIV/AIDS indicators are used extensively for monitoring and evaluating prevention programs at the national level and were developed jointly with UNAIDS, the President's Emergency Plan for AIDS Relief (PEPFAR), and the UN General Assembly Special Session on HIV and AIDS (UNGASS).

TELL participants that specific examples of HIV/AIDS indicators will be covered in Module 6.

## Women's Empowerment: Employment

**Employment:** Percent of currently married women who were employed in the past 12 months

Country	Women's employment
Ethiopia DHS 2005	32%
Kenya DHS 2008-09	67%
Namibia DHS 2006-07	61%
Rwanda DHS 2005*	73%
Tanzania DHS 2010	89%
Uganda DHS 2006	92%
Zambia DHS 2007	61%

Module 3, Slide 30

EXPLAIN that women's empowerment is associated with positive demographic and health outcomes for women and their children. One of the indicators of women's empowerment is the percentage of currently married women who were employed and earned cash in the past 12 months.

\*Note: Rwanda DHS 2005 is referenced because data for this indicator is not provided in Rwanda DHS 2007-08.

## Women's Empowerment: Decisionmaking

**Decisionmaking:** Percent of currently married women age 15-49 who make decisions about their own health care either by themselves or jointly with their husband or partner

Country	Health Care Decisionmaking
Ethiopia DHS 2005	66%
Kenya DHS 2008-09	73%
Namibia DHS 2006-07	84%
Rwanda DHS 2005*	NA
Tanzania DHS 2010	60%
Uganda DHS 2006	61%
Zambia DHS 2007	65%

Module 3, Slide 31

EXPLAIN that another indicator of women's empowerment is the percent of currently married women who are empowered to make decisions on their own health care, either by themselves or jointly with their husbands.

\*Note: Rwanda DHS 2005 is referenced because data for this indicator is not provided in Rwanda DHS 2007-08.

## Gender-based Violence

**Spousal violence:** Percent of ever-married women age 15-49 who have experienced physical violence by their husband or partner

Country	Spousal violence
Ethiopia DHS 2005	NA
Kenya DHS 2008-09	37%
Namibia DHS 2006-07	NA
Rwanda DHS 2005*	31%
Tanzania DHS 2010	39%
Uganda DHS 2006	48%
Zambia DHS 2007	47%

Module 3, Slide 32

EXPLAIN that the DHS has a special module on gender-based violence that can be added to a standard survey. The module was originally designed to be used only with women respondents. However, several countries are now including questions about men's experiences with domestic violence. The module includes questions for respondents on whether they have experienced spousal violence and, if so, what forms.

Due to the sensitivity of the subject and the need to protect the security of the respondents, interviewers ensure complete privacy before completing the gender-based violence module. Only one spouse per household is asked about domestic violence.

\*Note: Rwanda DHS 2005 is referenced because data for this indicator is not provided in Rwanda DHS 2007-08.

# **Module 3**

## **Session 3**

- Biomarkers and Wealth  
in the DHS

## Biomarkers

- Biological measures of health conditions
- Can relate to a wide range of conditions including infectious and sexually transmitted diseases, chronic illnesses like hypertension, micronutrient deficiencies, and exposure to environmental toxins
- Can enhance self-reported data: for example, night-blindness in the 2000-01 UDHS was reported at 7%, but serum retinol tests showed 52% of women had low levels of vitamin A
- Contribute to the understanding of behavioral risk factors and determinants of different illnesses

Module 3, Slide 34

EXPLAIN that the term **biomarker** refers to biological measures of health conditions. The DHS has successfully included biomarkers in many of its surveys. The earliest example of biomarkers is the collection of height and weight data from children.

DESCRIBE these examples of biomarkers for which data have been collected in the DHS (the biomarkers are in bold text):

- *Nutrition*: **hemoglobin** (for anemia), **serum retinol** (for vitamin A), **anthropometry** (height and weight measurements)
- *Adult health*: **Blood pressure**, **lipids** (cholesterol)
- *Sexually transmitted infections (STIs)*: **HIV**, Chlamydia, gonorrhea, syphilis, and herpes
- *Malaria*: testing for **malaria parasites**

Biomarkers can complement self-reported data and provide an objective measure of health status. For example, the success of a vitamin A supplementation program can be assessed by testing serum retinol levels in the population. But in most cases, biomarkers collected in the DHS do not complement self-reported data (i.e. questionnaires do not ask for self-reported data on anemia). Biomarkers also contribute to the understanding of factors and determinants of different illnesses by linking health outcomes to the respondents' characteristics. Biomarkers help to evaluate programs.

In addition to collecting biomarkers, or biological data, from respondents, the DHS tests salt in many countries for iodine content. Many countries require that iodine be added to salt to ensure that people get enough iodine in their diet. Insufficient iodine can cause mental retardation, stillbirths, and other problems during pregnancy and can cause abnormal growth of the thyroid gland, also called a goiter.

## Anthropometry

- Inexpensive and non-invasive measure of the general nutritional status of an individual or a population group
- Indices have four building blocks:



Module 3, Slide 35

EXPLAIN that anthropometry is an inexpensive and noninvasive measure of the general nutritional status of an individual or a population. There are four main elements in using anthropometry as an indicator of nutrition: age, sex, weight, and length/height. The DHS measures all four.

## Anthropometry Indicators

- Three common measures:
  - *Height-for-age*: indicator of stunting (too short for age)
  - *Weight-for-height*: indicator of wasting (too thin for height)
  - *Weight-for-age*: indicator of underweight (too thin for age)
- WHO Child Growth Standards are used to measure where children fall in relation to other breastfed, well-nourished children from around the world.

Module 3, Slide 36

EXPLAIN that the three most common anthropometrical measurements are height-for-age (stunting), weight-for-height (wasting), and weight-for-age (underweight). As discussed in Module 2, the WHO Child Growth Standards are used to measure where children in a specific country fall in comparison with a standard reference population of children from around the world.

## Collecting Anthropometric Data



**Child being measured during the 2007  
Democratic Republic of Congo DHS**

Photo by Tinga Sinaré



**Child being weighed,  
Rwanda SPA 2007**

Photo by Rathavuth Hong

Module 3, Slide 37

EXPLAIN that the DHS uses specially prepared boards to measure the height of children. Interviewers are trained for several days on taking accurate measurements to be sure that they measure children the same way, so heights and weights are comparable within a country and across countries.

## Anemia Testing

- Finger prick to collect one drop of blood
- Hemoglobin measured with HemoCue device
- Results ready in the field in less than one minute
- Over 60 DHS surveys have tested for anemia



Module 3, Slide 38

EXPLAIN that the HemoCue device shown in the photos on this slide is the most commonly used device for measuring hemoglobin levels in the field. The device is easy to transport and provides results within one minute.

## Malaria Testing

- Rapid diagnostic test (RDT) kits are used to assess the presence of malaria parasites in respondents' blood.
- RDT kits are easy to use in remote areas where lab facilities are not available.
- In most countries, microscopy (slides) are used in addition to RDT kits.

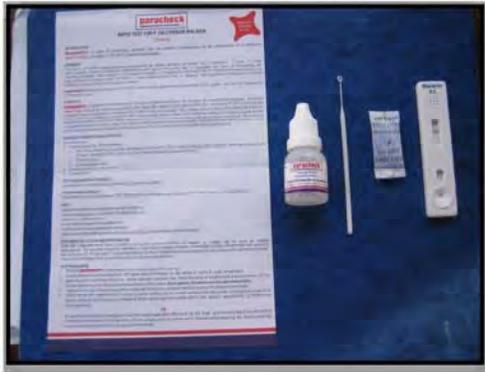
Module 3, Slide 39

EXPLAIN that, as mentioned earlier, malaria is a major cause of illness in Africa. DHS is a partner in Roll Back Malaria, a major international consortium that seeks to eliminate malaria worldwide. Malaria testing in the DHS provides a good objective measure of actual malaria infection. Unlike other illnesses tested in the DHS, however, malaria is seasonal, so survey results may differ depending on the time of year the data are collected.

Testing for malaria in the DHS is most commonly done using rapid diagnostic test (RDT) kits. Microscopy, or slides, is used in addition to RDT kits to validate the results.

During the survey, children and adults who are tested and found to be infected with malaria parasites are treated with nationally recommended drugs and are also referred to health centers for follow-up treatment.

## Rapid Diagnostic Test (RDT) for Malaria



Module 3, Slide 40

These photos illustrate an RDT kit.

## Measuring Economic Status

Ways to measure economic status:

- Income
- Expenditures
- Relative wealth

Module 3, Slide 41

The DHS has created a measure of relative wealth known as the Wealth Index. The Wealth Index lets us analyze the impact of wealth on health outcomes, health services, and the reach of public health services using DHS data. Many programs use geographical criteria to target their activities, and being able to map poverty or wealth is important.

DISCUSS with participants the principal uses for a measure of economic status with regard to health programs. Make sure the following point is addressed:

Access to certain health programs may be related to the ability to pay a fee for health services.

## Income and Expenditures

- Conventional approaches to measuring wealth focus on household income and expenditures.
- Collecting estimates of income and expenditures can be difficult and time consuming because people: are not always paid in cash, may be paid intermittently, or may not know their annual income
- Frequent changes in employment status can be a problem with both income and expenditure data.

Module 3, Slide 42

TELL participants that the most common ways for surveys to measure wealth are to assess how much income a household receives and how the household spends its money. However, this can be time-consuming and expensive to do. In areas where people are not paid in hard currency or where jobs are transient, it is even more difficult to carry out. This is why the DHS developed a different approach to measuring wealth.

## Wealth Index

- The wealth index is a proxy indicator for a household's long-term standard of living that has been validated and supported by the World Bank.

### Assets and services usually asked about in DHS surveys:

Type of flooring	Refrigerator
Water supply	Type of vehicle
Sanitation facilities	Persons per sleeping room
Electricity	Ownership of agricultural land
Radio	Domestic servant
Television	Country-specific items
Telephone	

Module 3, Slide 43

ASK participants for to define a **proxy indicator**. Answer: A proxy takes the place of, or stands in for, something else. In this case, the DHS uses other factors (or proxies) to calculate wealth.

EXPLAIN that the DHS measures wealth based on (1) household ownership of durable goods like radios and bicycles; (2) household access to water and sanitary facilities; and (3) the materials used in house construction.

ASK what a quintile is and what percentage of the population a quintile contains. Answer: One-fifth of the population, or 20%.

In each country, the population is divided into five equal groups, called quintiles, ranging from the lowest or least well-off to the highest or most well-off. The five quintiles are called Lowest, Second, Middle, Fourth, and Highest.

People in the highest wealth quintile in a country are rich only in relation to other people in the same country. Thus, people in the highest wealth quintile in South Africa will not have the same level of wealth as people in the highest wealth quintile in Niger.

DISCUSS what this might mean if you are trying to compare your country to another country.

## Wealth Quintiles

- The Wealth Index measures a household's standard of living relative to other households in the same country.
- Wealth quintiles do not indicate whether a household lives in poverty according to the country's definition of poverty.
- Instead, wealth quintiles rank households: The socioeconomic status of a person living in a household in the second quintile is higher than someone in the lowest quintile, but lower than someone in the middle quintile.

Module 3, Slide 44

The wealth index lets us compare one household's wealth with other households in the same country. It does not define poverty the way that a country might do, for example, by measuring the percent of the population living below a certain income. The wealth index provides a ranking of households by wealth.

## Steps in Constructing the Wealth Index

1. Each household surveyed receives a score based on the assets it owns. Households are then ranked, lowest to highest.
2. The sample is divided into quintiles, i.e., five groups, with the same number of individuals in each.
3. The 20% of the population with the lowest total asset scores become the individuals in the lowest wealth quintile, the next 20% become the members of the second wealth quintile, and so on.
4. At the national level, approximately 20% of the household population is in each wealth quintile.

Module 3, Slide 45

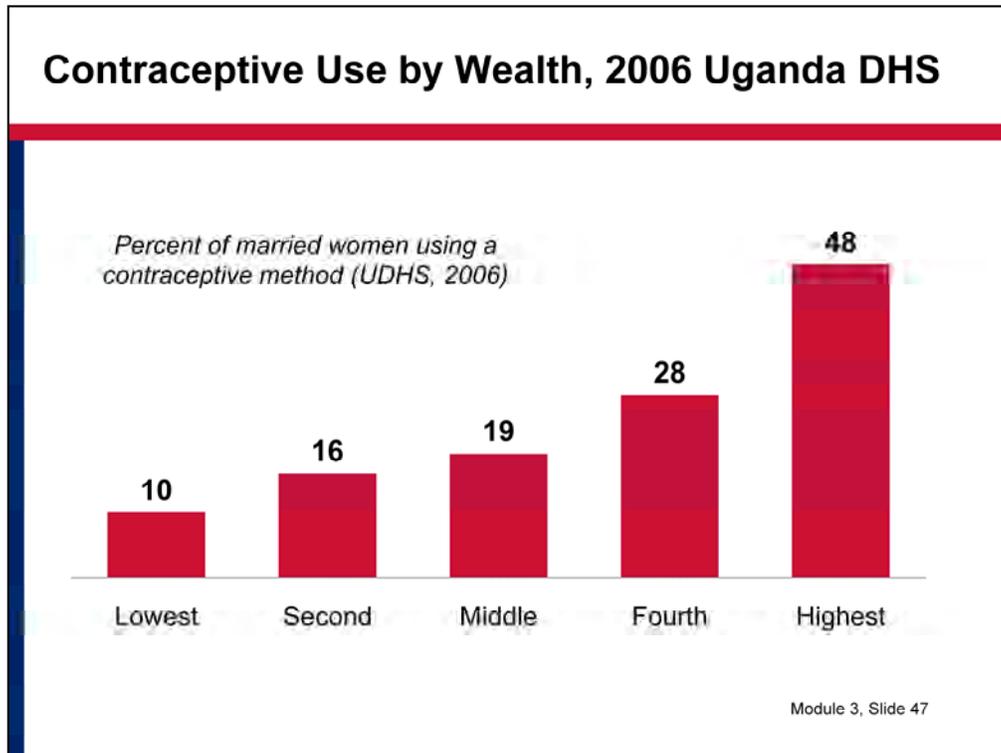
These two slides provide two slightly different explanations of how to construct the wealth index. Chose whichever definition is appropriate for participants' knowledge level. Slide 45 is simpler than Slide 46.

## How to Construct the Wealth Index

1. Each household asset for which information is collected is assigned a weight, or factor score, generated through principal components analysis.
2. The resulting asset scores are standardized in relation to a standard normal distribution, with a mean of zero and a standard deviation of one.
3. Each household is assigned a standardized score for each asset; the score differs depending on whether or not the household owns that asset (or in the case of sleeping arrangements, the number of people per room)
4. The scores are summed by household. Individuals are ranked according to the total score of the household in which they reside, and all households are divided into quintiles.

Module 3, Slide 46

These two slides provide two slightly different explanations of how to construct the wealth index. Chose whichever definition is appropriate for participants' knowledge level. Slide 45 is simpler than Slide 46.



TELL participants to divide themselves into groups of three.

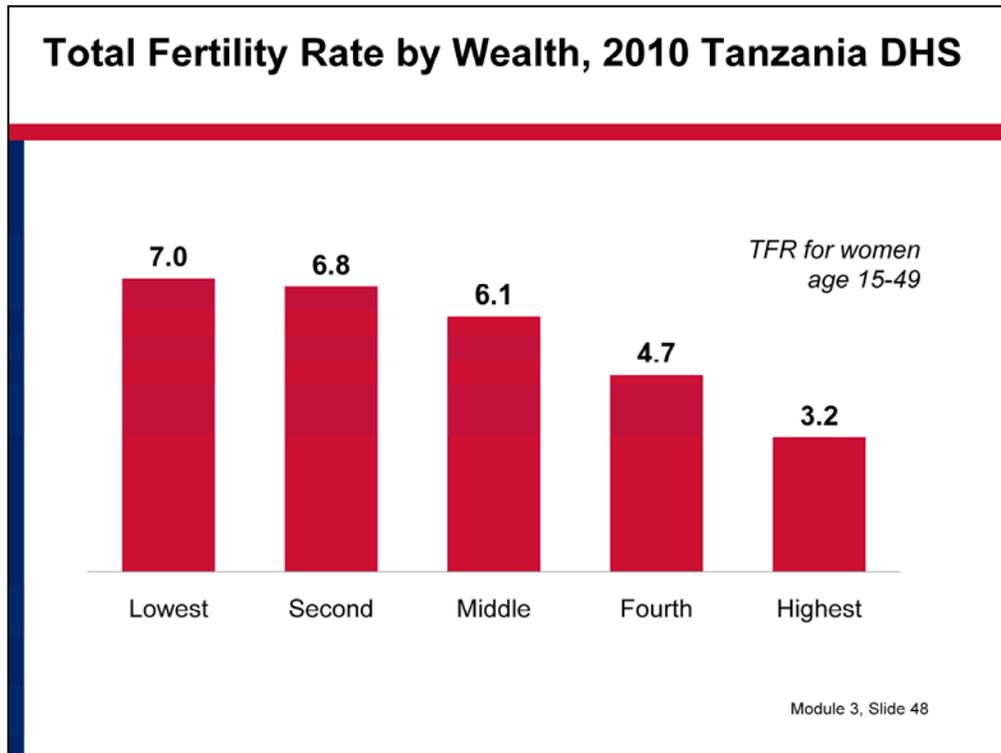
DISTRIBUTE **Exercise 3.1**, *The DHS Wealth Index*, and give the groups about 10 minutes to complete the exercise.

After they are done, BRING everyone together and PRESENT **Slides 47 and 48**. DISCUSS the following questions with the participants:

1. What do these two graphs show about wealth?
2. Why is the Wealth Index important for public health interventions and health communication campaigns?

Make sure the following points are made:

- Health practices and health status often vary by wealth.
- In both examples, health practices are positively correlated with wealth; that is, as wealth increases, contraceptive use and trained assistance at childbirth also increase. This is true in many countries.
- The wealth index helps explore differences in access to health care.
- The wealth index can help identify populations with special needs. In Nigeria, for example, children from the wealthiest households are 13 times more likely to be vaccinated than children from the poorest households.



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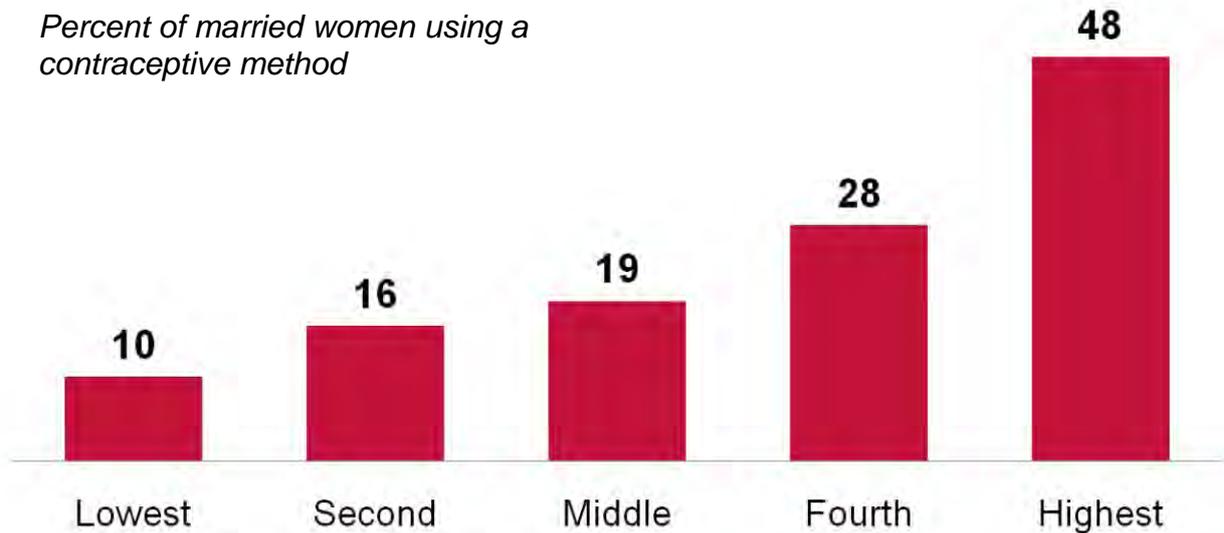
## Exercise 3.1

### The DHS Wealth Index

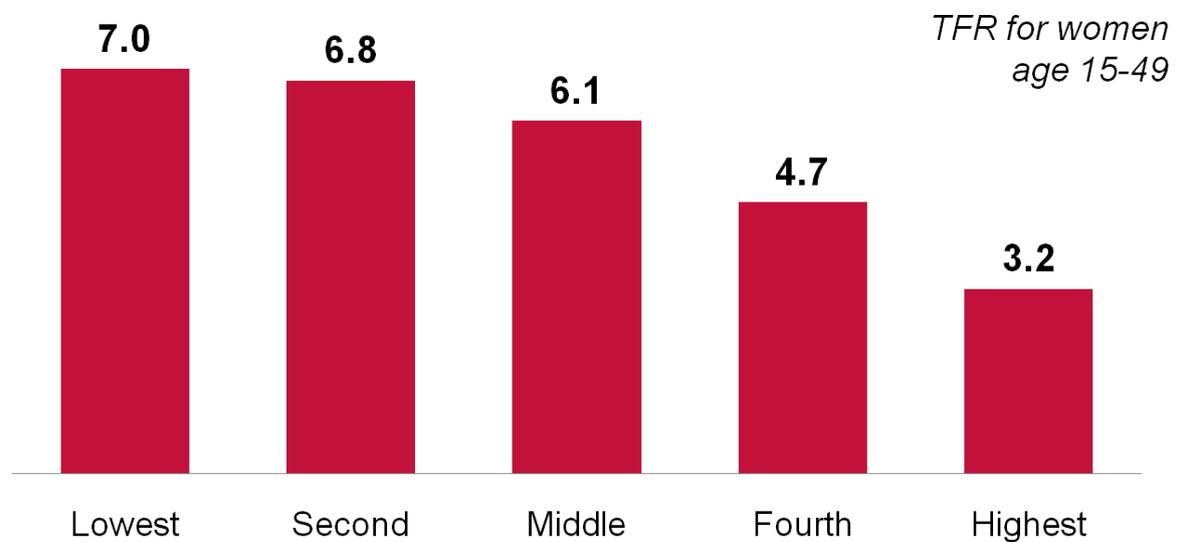
Discuss in small groups:

1. What do the two graphs below show about wealth?
2. Why is the Wealth Index important for public health interventions and for health communication campaigns?

#### Contraceptive Use by Wealth (2006 Uganda DHS)



#### Total Fertility Rate by Wealth (2010 Tanzania DHS)



## Handout 3.1

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### Characteristics of a Good Indicator

**Simple:** Indicators should be simple, but selecting a simple indicator is not always an easy task. It often requires finding a balance between the ideal (which may be complex and/or impossible to collect) and the practical. For example, to determine the prevalence of anemia in a population, it would be ideal to collect venous blood samples from respondents and measure the levels of serum iron, serum transferrin, and hemoglobin simultaneously. However, in surveys in which thousands of individuals are eligible for testing, financial and logistical constraints make this combination of laboratory-based tests impractical. Instead, only hemoglobin is measured as an indicator of anemia; using a drop of blood taken from the finger and a portable analyzer, hemoglobin levels can be measured in a matter of minutes. It is important to collect only what is needed rather than what is possible or interesting.

**Clearly and precisely defined:** An indicator should be clearly and precisely defined. It is not sufficient, for instance, to use the number of underweight children as an indicator. How has underweight been defined? Which children are being measured? Also, presenting an indicator as a proportion of the population of interest is often more informative than presenting the number on its own. Thus, a better indicator for underweight children would be:

$$\frac{\text{Number of underweight}^1 \text{ children age 6–24 months}}{\text{Total number of children age 6–24 months who were weighed}}$$

**Measurable:** Some indicators are easily and directly measured, such as height and weight. Others need to be clearly and precisely defined before they can be accurately measured. Take, for example, access to piped water. What qualifies as access and what does not? The DHS defines access as having piped water available inside the household or available within 250 yards of the household. Measuring qualitative variables in quantitative terms is even more challenging and may require creating a scale or index. Knowledge of correct breastfeeding practices, for example, might be measured by a respondent's ability to give the correct answers to a set of objective questions.

**Valid:** A valid indicator accurately reflects the situation it is intended to measure. For example, weight alone is not a valid indicator of overweight

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<sup>1</sup> Underweight is defined as a weight-for-age two standard deviations (SD) below the norm.

## Handout 3.1

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and obesity; it must be combined with height. A valid indicator in one setting may be invalid in another. For example, in a population with adequate intake of fat, the dietary intake of foods rich in vitamin A may be a valid indicator of overall vitamin A status. However, among a population where fat intake is inadequate, it would be an invalid indicator because fat is required for vitamin A absorption.

**Reliable:** A reliable indicator will produce the same results every time it is measured, regardless of who collects the data. Reliability is not the same as validity. A reliable indicator may provide an invalid result.

**Variable:** To be useful, indicators must measure variation. Some indicators vary in one population but not in another. If an indicator does not vary, it will not discriminate between those who have benefited from a program and those who have not. For example, the materials used in house construction may be a good indicator of economic status in rural areas, where houses may be made of mud, sticks, or cement, but not in urban areas where both poor and rich households may live in cement structures.

**Sensitive:** Indicators must be sensitive to assess change over time. For example, many countries in Africa have implemented large mosquito net distribution campaigns to combat malaria. Indicators that can measure the rapid changes in ownership of these nets over time are essential for evaluating the success of the distribution programs.

## Handout 3.2

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### Examples of Indicators in the DHS

#### *Education*

As a part of routine data collection, the DHS asks respondents about their education, including the highest grade completed, number of years of schooling, and literacy. Literacy is assessed by asking respondents to read a short written phrase in the language that the respondent is most likely to be able to read. The questions to assess literacy are asked only of those who have not attended school or who have attended only primary school. The DHS assumes that respondents with a secondary or higher education are literate. The DHS calculates the following two indicators of education:

**Schooling:** The percent of women and men age 15-49 who have received no schooling.

**Literacy:** The percent of women and men age 15-49 who are literate (i.e., have attended secondary school or higher OR can read a whole sentence or part of a sentence).

#### *Fertility and Family Planning*

**Total Fertility Rate (TFR):** Average number of births that a group of women would have by the time they reach age 50, if they were to give birth at the current age-specific rates. Rates are based on the three years before the survey in order to avoid bias due to recall and to get the most current information on births.

**Contraceptive Prevalence Rate (CPR):** Percent of married women age 15-49 who are currently using any method of contraception. This standard indicator is widely used in reporting to donors and as a measure of program success. The CPR includes both modern and traditional family planning methods.

**Unmet need:** Percent of married women who do not want a child in the next two years or do not want another child AND are not currently using a method of contraception.

#### *Child Mortality*

**Infant mortality:** Probability of dying between birth and the first birthday, for the five years before the survey.

**Under-five mortality:** Probability of dying between birth and the fifth birthday, for the five years before the survey.

## Handout 3.2

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### **Maternal Health**

**Antenatal care:** Percent of live births in the five years before the survey to women age 15–49 for which antenatal care from a skilled provider (doctor, nurse, midwife, auxiliary nurse/midwife) was obtained.

**Place of delivery:** Percent of live births delivered in a health facility in the five years before the survey.

Another commonly used indicator based on DHS data is the percent of deliveries assisted by a trained provider.

### **Child Health**

**Fully vaccinated:** Percent of children age 12–23 months who had received all basic vaccinations by the time of the survey. A child is fully vaccinated if he/she receives all of the following:

- BCG (against tuberculosis)
- Measles
- Three doses of polio vaccine (excluding polio vaccine given at birth)
- Three doses each of DPT (a combination of antigens for diphtheria, pertussis or whooping cough, and tetanus) OR a pentavalent vaccine used in some countries that combines antigens for diphtheria, pertussis, and tetanus with those for hepatitis B and *haemophilus influenzae* type b (Hib).

**Prevalence of acute respiratory infection (ARI):** Among children under five, percent who have symptoms of ARI in the two weeks before the survey. The symptoms of ARI are cough accompanied by short, rapid breathing. Symptoms of ARI are considered a proxy for pneumonia.

Similar indicators are collected to measure the prevalence of fever and diarrhea among children. They also restrict the time to two weeks before the survey in order to reduce recall bias among women.

### **Nutrition**

**Breastfeeding:** Percent of children born in the five years before the survey who were ever breastfed.

**Stunting:** Percent of children under age five who are stunted, that is, who are too short for their age.

**Vitamin A supplementation:** Percent of children age 6–59 months who were given vitamin A supplements in the six months before the survey.

## Handout 3.2

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**BMI:** The ratio of weight to the square of height of an individual. The DHS collects the height and weights of adults and children in a household. To calculate the BMI of an adult, the weight of a person in kilograms is divided by his/her height in meters squared. BMI is divided into four categories:

- Underweight: <18.5
- Normal: 18.5–24.9
- Overweight: 25.0–29.9
- Obese:  $\geq 30.0$

Often, overweight and obese are combined into a single category ( $\geq 25.0$ ). Both low and high BMI are risk factors for poor birth outcomes and delivery complications. Overweight and obesity are growing problems in the developing world and are associated with health problems such as diabetes and heart disease.

**Anemia:** Measured by blood hemoglobin levels. The DHS measures hemoglobin levels in grams per deciliter (g/dl) by onsite testing of blood with a special instrument. Among women who are **not** pregnant, anemia is defined by the following hemoglobin levels:

- Mild anemia: 10.0–11.9 g/dl
- Moderate anemia: 7.0–9.9 g/dl
- Severe anemia: <7.0 g/dl

For pregnant women, mild anemia is defined as 10.0 to 10.9 g/dl. Adjustments to the hemoglobin count are also made for altitude and for smoking status, both of which affect anemia levels.

### ***Malaria***

Malaria is one of the leading sources of mortality in the developing world. The DHS collects information that can help monitor malaria control programs, including information on the possession and use of mosquito nets and treatment with antimalarial drugs. Selected indicators are listed below:

**Ownership of insecticide-treated nets (ITNs):** Percent of households with at least one ITN.

**Use of insecticide-treated nets (ITNs):** Percent of children under age five who slept under an ITN the night before the survey.

**Use of intermittent preventive treatment (IPT):** Percent of women age 15–49 with a live birth in the two years before the survey who,

## Handout 3.2

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during that pregnancy, took at least two doses of an antimalarial drug (commonly SP/Fansidar) during ANC visits.

### ***HIV/AIDS***

One major contribution of the DHS is that it provides nationally-representative data on HIV/AIDS knowledge, attitudes, and behaviors. The HIV/AIDS indicators are used extensively for monitoring and evaluating prevention programs at the national level and were developed jointly with UNAIDS, the President's Emergency Plan for AIDS Relief (PEPFAR), UNGASS, and Youth Guide. More on these indicators will be discussed in Module 6.

### ***Women's Empowerment***

Women's empowerment is associated with positive demographic and health outcomes for women and their children. Questions regarding women's empowerment are optional and are not included in every DHS survey.

**Employment:** Percent of currently married women who were employed in the past 12 months.

**Decisionmaking:** Information is collected on four types of decisions: respondent's own health care, large household purchases, purchases of daily needs, and visits to family, friends, or relatives. An example of an indicator on decisionmaking autonomy is: the percent of currently married women age 15–49 who usually decide on their own health care either by themselves or jointly with their husbands.

**Domestic violence:** A special module on gender-based violence can be added to a standard DHS survey. The module asks women and men a series of questions to determine if they have experienced gender-based violence and, if so, what forms of violence. Due to the sensitivity of the subject and the need to protect the security of respondents, interviewers ensure that complete privacy is obtained before completing the violence module.

## Handout 3.3

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### **International Indicators Measured through MEASURE DHS Surveys**

During the last decade there has been an increased effort to track progress in the areas of health and sustainable development in the less developed regions of the world. A number of international agencies and organizations have created indicators to aid in this process.

The Millennium Development Goals (MDGs) were derived from agreements made at the major international conferences and world summits of the 1990s, including the International Conference on Population and Development (Cairo, 1994) and the Fourth World Conference on Women (Beijing, 1995). These three development platforms converge in their affirmation of women's human rights and the recognition that solving the world's most pressing problems demands the full participation and empowerment of women. This point was reaffirmed by the expert report from the UN Millennium Project.

In many final reports, the DHS publishes selected summary indicators that correspond to internationally determined indicators. While DHS collects data that is useful in tracking these indicators, the DHS does not develop the indicators themselves. The tables below list international indicators that can be tracked using DHS data; they have been developed by the following agencies and programs:

- Millennium Development Goal Indicators (MDG)
- UNICEF World Fit for Children Indicators (WFfC)
- **Presidents' Emergency Plan for AIDS Relief (PEPFAR)**
- United Nations General Assembly Special Session (UNGASS)
- Joint United Nations AIDS Program (UNAIDS)
- Youth Guide
- **Presidents' Malaria Initiative (PMI)**
- Roll Back Malaria Partnership (RBM)
- UNESCO
- WHO Indicators for assessing infant and young child feeding practices (IYCF)

## Handout 3.3

<b>Millennium Development Goal (MDG) Indicators in the DHS</b>	
<b>Goal</b>	<b>Indicator</b>
1. Eradicate extreme poverty and hunger	4. Prevalence of underweight children under age five
2. Achieve universal primary education	6. Net enrolment ratio in primary education 7. Percentage of pupils starting grade 1 who reach grade 5 7b. Primary completion rate 8. Literacy rate of 15-24 year-olds
3. Promote gender equality and empower women	9. Ratio of girls to boys in primary, secondary, and tertiary education  10. Ratio of literate women to men, age 15-24  11. Share of women in wage employment in the non-agricultural sector
4. Reduce child mortality	13. Under-five mortality rate 14. Infant mortality rate 15. Percentage of one-year-old children immunized against measles
5. Improve maternal health	16. Maternal mortality ratio  17. Percentage of births attended by skilled health personnel
6. Combat HIV/AIDS, malaria, and other diseases	19. Percentage of current contraceptive users who are using condoms 19a. Condom use at last high-risk sex 19b. Percentage of population age 15-24 with comprehensive, correct knowledge of HIV/AIDS 19c. Contraceptive prevalence rate  20. Ratio of school attendance of orphans to school attendance of non-orphans age 10-14  22. Percentage of population in malaria-risk areas using effective malaria prevention and treatment measures 22a. Percentage of children under five sleeping under ITN 22b. Percentage of children under five who are appropriately treated
7. Ensure environmental sustainability	29. Percentage of population using solid fuels  30. Percentage of population with sustainable access to an improved water source (urban and rural) 31. Percentage of population with access to improved sanitation (urban and rural) 32. Percentage of households with access to secure tenure

## Handout 3.3

<b>UNICEF World Fit for Children Indicators in the DHS</b>	
<b>Indicator</b>	<b>Definition</b>
<b>Mortality</b> 1. Under-five mortality rate 2. Infant mortality rate	1. Probability of dying by exact age 5 years (5 years preceding the survey) 2. Probability of dying by exact age 1 year (5 years preceding the survey)
<b>Environment</b> 11. Use of improved drinking water sources 12. Use of improved sanitation facilities 13. Water treatment 14. Disposal of child's feces 24. Solid fuels	11. Percent of household members living in households using improved sources of drinking water 12. Percent of household members using improved sanitation facilities 13. Percent of household members using drinking water that has been treated 14. Percent of youngest child less than 5 years of age whose last stool was disposed of safely 24. Percent of population residing in households that use solid fuels (wood, charcoal, crop residues and dung) as the primary source of domestic energy to cook
<b>Education and Literacy</b> 55. Net primary school attendance rate 56. Net secondary school attendance rate 60. Adult literacy rate 61. Gender Parity Index for primary education; Gender Parity Index for secondary education 62. Birth registration	55. Percent of children of primary-school age currently attending primary or secondary school 56. Percent of children of secondary-school age currently attending secondary or tertiary school 60. Percent of women age 15-24 who are able to read a short simple statement about everyday life 61. Ratio of net proportion of girls in primary school to boys in primary school; Ratio of net proportion of girls in secondary school to boys in secondary school 62. Percent of children age 0-59 months whose births are reported as registered with civil authorities
<b>Marriage</b> 67. Marriage before age 15 Marriage before age 18 68. Women currently married or in union 69. Spousal age difference among women 15-19 Spousal age difference among women 20-24 70. Polygyny	67. Percent of women age 15-49 who were first married or in union by exact age 15; Percent of women age 20-49 who were first married or in union by exact age 18 68. Percent of women age 15-19 currently married or in union 69. Percent of married women age 15-19 who are 10 or more years younger than their current spouse; Percent of married women age 20-24 who are 10 or more years younger than their current spouse 70. Percent of women age 15-49 in a polygynous union
<b>Reproductive health</b> 4. Skilled attendant at delivery 5. Institutional deliveries 20. Antenatal care 44. Content of antenatal care 21. Contraceptive prevalence	4. Percent of births in the 2 years preceding the survey attended by health personnel 5. Percent of births in the 2 years preceding the survey delivered in a health facility 20. Percent of mothers 15-49 who received antenatal care from health personnel 44. Percent of women who received all four antenatal care interventions 21. Percent of currently married or in union women age 15-49 who are using (or whose partner is using) a contraceptive method (modern or traditional method)

## Handout 3.3

<b>UNICEF World Fit for Children Indicators in the DHS, continued</b>	
<b>Indicator</b>	<b>Definition</b>
<p><b>Breastfeeding and child nutrition</b></p> <p>45. Timely initiation of breastfeeding</p> <p>15. Exclusive breastfeeding rate</p> <p>16. Continued breastfeeding rate</p> <p>17. Timely complementary feeding rate</p> <p>18. Frequency of complementary feeding</p> <p>19. Adequately fed infants</p> <p>6. Children underweight</p> <p>7. Children stunted</p> <p>8. Children wasted</p> <p>9. Low birth weight infants</p> <p>10. Infants weighed at birth</p>	<p>45. Percent of births that were put to the breast within one hour of birth</p> <p>15. Percent of infants less than 6 months of age who are exclusively breastfed</p> <p>16. Percent of children age 12-15 months currently breastfeeding Percent of children age 20-23 months currently breastfeeding</p> <p>17. Percent of infants age 6-9 months who are breastfed and receive solid or semi-solid foods</p> <p>18. Percent of infants age 6-11 months who are breast fed and receive solid or semi-solid foods at least the minimum recommended number of times per day (2 times a day for 6-8 month olds, 3 times a day for 9-11 month olds)</p> <p>19. Percent of infants 0-11 months who are appropriately fed: infants 0-5 months exclusively breastfed and infants 6-11 months who are breastfed and received solid or semi-solid foods the appropriate number of times (see indicator 18) yesterday</p> <p>6. Percent of children less than 5 years of age moderately or severely underweight</p> <p>7. Percent of children less than 5 years of age moderately or severely stunted</p> <p>8. Percent of children less than 5 years of age moderately or severely wasted</p> <p>9. Percent of births in the 2 years preceding the survey at low birth weight</p> <p>10. Percent of births in the 2 years preceding the survey who were weighed at birth</p>
<p><b>Vaccinations &amp; vitamin supplementation</b></p> <p>25. Tuberculosis immunization coverage</p> <p>26. Polio immunization coverage</p> <p>27. DPT immunization coverage</p> <p>28. Measles immunization coverage</p> <p>29. Hepatitis B immunization coverage</p> <p>31. Fully immunized children</p> <p>32. Neonatal tetanus protection</p> <p>41. Iodized salt consumption</p> <p>42. Vitamin A supplement</p> <p>43. Vitamin A supplement (postpartum mothers)</p>	<p>25. Percent of children age 12-23 months receiving BCG vaccine before 12 months of age</p> <p>26. Percent of children age 12-23-months receiving OPV3 vaccine before 12 months of age</p> <p>27. Percent of children age 12-23 months receiving DPT3 vaccine before 12 months of age</p> <p>28. Percent of children age 12-23[35] months receiving measles vaccine before 12 months of age</p> <p>29. Percent of children age 12-23 months immunized against hepatitis before 12 months of age</p> <p>31. Percent of children age 12-23 months receiving all four vaccinations before 12 months of age</p> <p>32. Percent of children age 0-11 months protected against neonatal tetanus through immunization of their mothers with two or more doses of TT within an appropriate interval prior to infant's birth<sup>5</sup></p> <p>41. Percent of households with salt testing at least 15 parts per million of iodine or iodate</p> <p>42. Percent of children age 6-59 months receiving at least one high dose vitamin A supplement during the 6 months preceding the survey</p> <p>43. Percent of women who received a high dose vitamin A supplement within 8 weeks after birth</p>

## Handout 3.3

<b>UNICEF World Fit for Children Indicators in the DHS, continued</b>	
<b>Indicator</b>	<b>Definition</b>
<p><b>Child health care</b></p> <p>22. Antibiotic treatment of suspected pneumonia</p> <p>23. Care seeking for suspected pneumonia</p> <p>33. ORT use</p> <p>34. Home management of diarrhea</p> <p>35. Received ORT or increased fluids, and continued feeding</p>	<p>22. Percent of children age 0-59 months with suspected pneumonia in the previous 2 weeks receiving antibiotics</p> <p>23. Percent of children age 0-59 months with suspected pneumonia in the previous 2 weeks, taken to an appropriate health provider</p> <p>33. Percent of children age 0-59 months with diarrhea in the previous 2 weeks who were given oral rehydration salts (from a packet or pre-package solution) or an appropriate homemade solution (ORT)</p> <p>34. Percent of children age 0-59 months with diarrhea in the previous 2 weeks who were given more fluids than usual AND who continued feeding</p> <p>35. Percent of children age 0-59 months with diarrhea who were given [ORT or more fluids than usual] AND who continued feeding</p>
<p><b>Malaria</b></p> <p>36. Insecticide treated bed nets (ITNs)</p> <p>37. Under fives sleeping under an ITN bed net</p> <p>38. Under fives sleeping under any bed net</p> <p>39. Antimalarial treatment (under fives)</p> <p>40. Intermittent preventive malaria treatment (pregnant women)</p>	<p>36. Percent of households with at least one mosquito net; permanently treated or treated within 1 year</p> <p>37. Percent of children age 0-59 months who slept under an ITN bed net the previous night</p> <p>38. Percent of children age 0-59 months who slept under a bed net the previous night</p> <p>39. Percent of children age 0-59 months reported to have fever in the previous 2 weeks who were treated with an appropriate anti-malarial within 24 hours of fever onset</p> <p>40. Percent of women receiving appropriate intermittent medication to prevent malaria (defined as at least 2 doses of SP/Fansidar) during the last pregnancy leading to a live birth within the 2 years preceding the survey</p>
<p><b>Youth sexual practices</b></p> <p>82. Comprehensive knowledge about HIV prevention</p> <p>83. Condom use with non-regular partners</p> <p>84. Age at first sex</p> <p>85. Higher risk sex in the last year</p> <p>92. Age-mixing among sexual partners</p>	<p>82. Percent of women age 15-24 who correctly identify 2 ways of avoiding HIV infection and reject 3 common misconceptions about HIV/AIDS</p> <p>83. Percent of women age 15-24 reporting the use of a condom during sexual intercourse with their last non-marital, non-cohabiting sex partner in the previous 12 months</p> <p>84. Percent of women age 15-24 who had sex before exact age 15</p> <p>85. Percent of sexually active women age 15-24 who had sex with a non-marital, non-cohabiting partner in the previous 12 months</p> <p>92. Percent of women age 15-24 who had sex in the past 12 months with a partner who was 10 or more years older than themselves</p>
<p><b>HIV/AIDS</b></p> <p>86. Attitudes toward people with HIV/AIDS</p> <p>87. Knowledge of where to be tested for HIV</p> <p>88. Women who have been tested for HIV</p> <p>89. Knowledge of vertical MTC transmission</p> <p>90. PMTCT counseling coverage</p> <p>91. PMTCT testing coverage</p>	<p>86. Percent of women age 15-49 expressing discriminatory attitudes towards people with HIV/AIDS</p> <p>87. Percent of women age 15-49 who state knowledge of a place to be tested for HIV</p> <p>88. Percent of women age 15-49 who report being tested for HIV</p> <p>89. Percent of women age 15-49 who correctly identify all 3 means of vertical MTC transmission of HIV</p> <p>90. Percent of women age 15-49 who gave birth in the 24 months preceding the survey reporting that they attended ANC and received counseling on HIV/AIDS</p> <p>91. Percent of women age 15-49 that gave birth in the previous 24 months who reported that they attended an ANC clinic and received the results of an HIV test</p>

## Handout 3.3

### International HIV/AIDS Indicators in the DHS

<b>President's Emergency Plan for AIDS Relief (PEPFAR)</b>
<b><i>Essential Indicators</i></b>
P8.8.N Percentage of young women and men aged 15–24 who both correctly identify ways of preventing the sexual transmission of HIV and who reject major misconceptions about HIV transmission
P8.9.N Percent of never married young men and women aged 15–24 who have never had sex
P8.10.N Percentage of young women and men aged 15-24 who have had sexual intercourse before the age of 15
P8.11.N Percentage of women and men aged 15–49 who have had sexual intercourse with more than one partner in the last 12 months
P8.12.N Percent of women and men aged 15–49 who have had more than one sexual partner in the last 12 months reporting the use of a condom their last sexual intercourse
P8.19.N Percentage of young people aged 15-24 who report they could get condoms on their own
P8.22.N STIGMA: Percentage of the general population with accepting attitudes toward persons living with HIV/AIDS
P9.3.N Percent of men aged 15-49 reporting sex with a sex worker in the last 12 months who used a condom during last paid intercourse
P11.2.N Percentage of women and men age 15-49 who received an HIV test in the last 12 months and who know their results
<b><i>Recommended Indicators</i></b>
P3.4.N Average number of medical injections per person per year
P3.5.N Proportion of women and men age 15-49 reporting that the last health care injection was given with a syringe and needle set from a new, unopened package
P8.16.N Sexually active in last year: Percentage of young never married people (age 15-24) who have had sex in the last 12 months
P8.17.N Percentage of youth who have ever had sexual intercourse
P8.18.N Percentage of young people (aged 15-24) who used a condom the first time they ever had sex, of those who have ever had sex, disaggregated by age group (15-19, 20-24) and gender
P8.20.N Condom use at last premarital sex, last sex: Percentage of young never married people (aged 15-24) who used a condom at last sex, of all young single sexually active people surveyed
P8.21.N Percentage of adults who are in favour of young people being educated about the use of condoms in order to prevent HIV/AIDS

<b>UNGASS</b>
<b><i>National Programmes</i></b>
Indicator 7. Percentage of women and men aged 15-49 who received an HIV test in the last 12 months and who know their results
Indicator 10. Percentage of orphaned and vulnerable children aged 0–17 whose households received free basic external support in caring for the child
<b><i>Knowledge and Behavior</i></b>
Indicator 12. Current school attendance among orphans and among non-orphans aged 10–14
Indicator 13. Percentage of young women and men aged 15–24 who both correctly identify ways of preventing the sexual transmission of HIV and who reject major misconceptions about HIV transmission
Indicator 15. Percentage of young women and men aged 15–24 who have had sexual intercourse before the age of 15
Indicator 16. Percentage of women and men aged 15–49 who have had sexual intercourse with more than one partner in the last 12 months
Indicator 17. Percentage of women and men aged 15–49 who had more than one sexual partner in the past 12 months reporting the use of a condom during their last sexual intercourse”

## Handout 3.3

### International HIV/AIDS Indicators in the DHS, continued

UNAIDS
<b><i>Stigma and Discrimination</i></b>
Indicator 1. Accepting attitudes toward those living with HIV
<b><i>Knowledge</i></b>
Indicator 1. Knowledge of HIV prevention methods
Indicator 2. No incorrect beliefs about AIDS
Indicator 5. Knowledge of prevention of mother-to-child transmission of HIV
<b><i>Voluntary Counseling and Testing</i></b>
Indicator 1. Population requesting an HIV test, receiving a test, and receiving test results
<b><i>Mother-to-Child Transmission</i></b>
Indicator 1. Pregnant women counseled and tested for HIV
<b><i>Sexual Negotiation and Attitudes</i></b>
Indicator 1. Women's ability to negotiate safe sex with husband
<b><i>Sexual Behavior</i></b>
Indicator 1. Higher risk sex in the last year
Indicator 2. Condom use at higher risk sex
Indicator 3. Commercial sex in last year
Indicator 4. Condom use at last commercial sex
<b><i>Young People's Sexual Behavior</i></b>
Indicator 1. Median age at first sex among young men and women
Indicator 2. Young people having premarital sex in last year
Indicator 3. Young people using a condom during premarital sex
Indicator 4. Young people having multiple partners in last year
Indicator 5. Young people using a condom at last higher-risk sex
Indicator 6. Condom use at first sex"
Indicator 7. Age-mixing in sexual relationships
<b><i>STI Care and Prevention</i></b>
Indicator 4. Men and women seeking treatment for STIs

Youth Guide
<b><i>Risk Factors and Protective Factors</i></b>
Indicator 9. Knowledge of HIV prevention among young people
Indicator 10. Knowledge of a formal source of condoms among young people
<b><i>Determinants</i></b>
Indicator 15. Adult support of education about condom for prevention of HIV/AIDS among young people
<b><i>Behavioral</i></b>
Indicator 16. Sex before the age of 15
Indicator 17. Condom use among young people who had higher-risk sex in the past year
Indicator 20. Age-mixing in sexual partnerships among young women
Indicator 21. Sex with commercial sex worker among young men
Indicator 22. Sex among young people while intoxicated
Indicator 23. HIV Testing behavior among young people
<b><i>Impact</i></b>
Indicator 30. Young people who have an STI

## Handout 3.3

### International Malaria Indicators in the DHS: President's Malaria Initiative and Roll Back Malaria Partnership

Indicator	President's Malaria Initiative (PMI)	Roll Back Malaria Partnership (RBM)
<b><i>Impact</i></b>		
All-cause under-five mortality rate	Impact 1	Indicator 9
Proportion of children 6-59 months old with moderate or severe anemia (<8g/dL)	Impact 4	Indicator 11
Proportion of children 6-59 months with malaria infection	Impact 5	Indicator 10
<b><i>Outcome</i></b>		
Proportion of households with at least one ITN	Outcome 1	Indicator 1
	Outcome 2. Proportion of households with a pregnant woman or children under 5 with at least one ITN	
Proportion of population of all ages who slept under an ITN the previous night	Outcome 3	Supplemental ITN Indicator
Proportion of children under five years old who slept under an ITN the previous night	Outcome 4	Indicator 2
Proportion of pregnant women who slept under an ITN the previous night	Outcome 5	Indicator 7
	Outcome 6. Proportion of household which received spraying through an IRS campaign within the last 12 months	
	Outcome 8. Proportion of children under 5 who slept under an ITN the previous night or in a house sprayed with IRS in the last 12 months	
	Outcome 9. Proportion of pregnant women who slept under an ITN the previous night or in a house sprayed with IRS in the last 12 months	
Proportion of households with at least one ITN and/or sprayed by IRS in the last 12 months	Outcome 10	Indicator 3
Proportion of women who received intermittent preventive treatment during ANC visits during their last pregnancy	Outcome 11	Indicator 8
	Outcome 12. Proportion of children under 5 with fever in the last two weeks who received treatment with ACTs within 24 hours of onset of fever	

## Handout 3.3

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Proportion of children under 5 with fever in the last two weeks who received treatment with an antimalarial according to national policy within 24 hours of onset of fever	Outcome 13	Indicator 5
Proportion of children under 5 with fever in the last two weeks who received any antimalarial treatment	Outcome 14	Indicator 4
Proportion of children under 5-years old with fever in the last 2 weeks who had a finger or heel stick	Outcome 15	Indicator 6

## Handout 3.3

### International Education Indicators in the DHS

<b>UNESCO</b>	
<b>Indicator</b>	<b>Definition</b>
Adult literacy or illiteracy rate	Percentage of population 15-49 who are able to read a short simple statement about everyday life
Number of adult illiterates	Percentage of population 15-49 who cannot read a short simple statement about everyday life
Gross Enrolment Ratio (GER)*	Total enrolment in a specific level of education, regardless of age, expressed as a percentage of the eligible official school-age population corresponding to the same level of education in a given school year.
Net Enrolment Rate (NER)*	Enrolment of the official age group for a given level of education expressed as a percentage of the corresponding population.
Age Specific Enrolment Rate (ASER)*	Enrolment of a specific single age enrolled, irrespective of the level of education, as a percentage of the population of the same age.
Repetition Rate by Grade (RR)	Percentage of students in a given grade in the previous school year who are repeating that grade in the current school year.
Dropout Rate by Grade (DR)	Percentage of students in a given grade in the previous school year who are not attending school.
Gender Parity Index (GPI)	The ratio of primary and secondary school NAR (GAR)'s for females to the NAR (GAR)'s for males.
*DHS surveys collect information on gross attendance ratio (GAR) and net attendance ratio (NAR)	

## Handout 3.3

<b>Indicators for Assessing Infant and Young Child Feeding Practices in the DHS</b>	
<b>Indicator</b>	<b>Definition</b>
<b><i>Core Indicators</i></b>	
<b>1. Early initiation of breastfeeding</b>	Proportion of children born in the last 24 months who were put to the breast within one hour of birth
<b>2. Exclusive breastfeeding under 6 months</b>	Proportion of infants 0-5 months of age who are fed exclusively with breast milk
<b>3. Continued breastfeeding at 1 year</b>	Proportion of children 12-15 months of age who are fed breast milk
<b>4. Introduction of solid, semi-solid or soft foods</b>	Proportion of infants 6-8 months of age who receive solid, semi-solid or soft foods
<b>5. Minimum dietary diversity</b>	Proportion of children 6-23 months of age who receive foods from 4 or more food groups
<b>6. Minimum meal frequency*</b>	Proportion of breastfed and non-breastfed children 6-23 months of age who receive solid, semi-solid, or soft foods (but also including milk feeds for non-breastfed children) the minimum number of times or more.
<b>7. Minimum acceptable diet</b>	Proportion of children 6-23 months of age who receive a minimum acceptable diet (apart from breast milk).
<b><i>Optional Indicators</i></b>	
<b>9. Children ever breastfed</b>	Proportion of children born in the last 24 months who were ever breastfed
<b>10. Continued breastfeeding at 2 years</b>	Proportion of children 20-23 months of age who are fed breast milk
<b>11. Age-appropriate breastfeeding</b>	Proportion of children 0-23 months of age who are appropriately breastfed
<b>12. Predominant breastfeeding under 6 months</b>	Proportion of infants 0-5 months of age who are predominantly breastfed
<b>13. Duration of breastfeeding</b>	Median duration of breastfeeding among children less than 36 months of age
<b>14. Bottle feeding</b>	Proportion of children 0-23 months of age who are fed with a bottle
<b>15. Milk feeding frequency for non-breastfed children*</b>	Proportion of non-breastfed children 6-23 months of age who receive at least 2 milk feedings
*These indicators are only collected in round six of DHS surveys	

## Module 3 Pre-Test

### 1. DHS Indicators:

- a. Are quantitative
- b. Are determined without input from international organizations
- c. are not clearly defined
- d. none of the above

### 2. All of the following are true about biomarkers EXCEPT

- a. they provide objective data
- b. most DHS biomarkers can be collected with drops of blood
- c. are impossible to collect without a venous blood draw
- d. provide data on HIV prevalence, anemia, and malaria

### 3. Fill in the blanks.

**Wasting:** Weight-for-\_\_\_\_\_ is two or more standard deviations below the median determined by international standards.

**Underweight:** Weight-for-\_\_\_\_\_ is two or more standard deviations below the median determined by international standards

**Stunting:** \_\_\_\_\_-for-Age is two or more standard deviations below the median determined by international growth standards.

### 4. Which of the following is NOT true about the wealth index calculated by the DHS:

- a. It is based on proxy indicators rather than income
- b. It can be used to directly compare different countries
- c. It divides the population into five equal groups or quintiles
- d. It can help identify populations with special needs.

**(Turn over for final question)**

**5. Match the following terms to their definition**

\_\_\_\_\_ Child mortality rate

\_\_\_\_\_ Infant mortality rate

\_\_\_\_\_ Neonatal mortality rate

\_\_\_\_\_ Under-five mortality rate

- a. Probability of dying between birth and age five; calculated as the number of children dying between birth and age five per 1,000 live births.
- b. Probability of dying between age one and five; calculated as the number of children dying between age one and five (13 to 59 months) per 1,000 children surviving to 12 months of age.
- c. children surviving to 12 months of age.
- d. Probability of dying within the first month of life; calculated as the number of children dying within the first 30 days of birth per 1,000 live births.
- e. Probability of dying between birth and age one; calculated as the number of deaths among infants under 12 months per 1,000 live births.

## Module 3 Post-Test

### 1. DHS Indicators:

- a. Are quantitative
- b. Are determined without input from international organizations
- c. are not clearly defined
- d. none of the above

### 2. All of the following are true about biomarkers EXCEPT

- a. they provide objective data
- b. most DHS biomarkers can be collected with drops of blood
- c. are impossible to collect without a venous blood draw
- d. provide data on HIV prevalence, anemia, and malaria

### 3. Fill in the blanks.

**Wasting:** Weight-for-\_\_\_\_\_ is two or more standard deviations below the median determined by international standards.

**Underweight:** Weight-for-\_\_\_\_\_ is two or more standard deviations below the median determined by international standards

**Stunting:** \_\_\_\_\_-for-Age is two or more standard deviations below the median determined by international growth standards.

### 4. Which of the following is NOT true about the wealth index calculated by the DHS:

- a. It is based on proxy indicators rather than income
- b. It can be used to directly compare different countries
- c. It divides the population into five equal groups or quintiles
- d. It can help identify populations with special needs.

(Turn over for final question)

## 5. Match the following terms to their definition

\_\_\_\_\_ Child mortality rate

\_\_\_\_\_ Infant mortality rate

\_\_\_\_\_ Neonatal mortality rate

\_\_\_\_\_ Under-five mortality rate

- a. Probability of dying between birth and age five; calculated as the number of children dying between birth and age five per 1,000 live births.
- b. Probability of dying between age one and five; calculated as the number of children dying between age one and five (13 to 59 months) per 1,000 children surviving to 12 months of age.
- c. children surviving to 12 months of age.
- d. Probability of dying within the first month of life; calculated as the number of children dying within the first 30 days of birth per 1,000 live births.
- e. Probability of dying between birth and age one; calculated as the number of deaths among infants under 12 months per 1,000 live births.

# ANSWER KEY

## Module 3

### 1. DHS Indicators:

- a. Are quantitative**
- b. Are determined without input from international organizations
- c. are not clearly defined
- d. none of the above

### 2. All of the following are true about biomarkers EXCEPT

- a. they provide objective data
- b. most DHS biomarkers can be collected with drops of blood
- c. are impossible to collect without a venous blood draw**
- d. provide data on HIV prevalence, anemia, and malaria

### 3. Fill in the blanks.

**Wasting:** Weight-for- Height is two or more standard deviations below the median determined by international standards.

**Underweight:** Weight-for- Age is two or more standard deviations below the median determined by international standards

**Stunting:** Height-for-Age is two or more standard deviations below the median determined by international growth standards.

### 4. Which of the following is NOT true about the wealth index calculated by the DHS:

- a. It is based on proxy indicators rather than income
- b. It can be used to directly compare different countries**
- c. It divides the population into five equal groups or quintiles
- d. It can help identify populations with special needs.

(Turn over for final question)

## ANSWER KEY

### 5. Match the following terms to their definition

**B** Child mortality rate

**D** Infant mortality rate

**C** Neonatal mortality rate

**A** Under-five mortality rate

- a. Probability of dying between birth and age five; calculated as the number of children dying between birth and age five per 1,000 live births.
- b. Probability of dying between age one and five; calculated as the number of children dying between age one and five (13 to 59 months) per 1,000 children surviving to 12 months of age.
- c. Probability of dying within the first month of life; calculated as the number of children dying within the first 30 days of birth per 1,000 live births.
- d. Probability of dying between birth and age one; calculated as the number of deaths among infants under 12 months per 1,000 live births.