

# Health, Nutrition and Population Technical Notes<sup>1</sup>

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<sup>1</sup> The technical notes are subject to continuous improvement and expansion. The authors solicit inputs of examples, disease-specific proposals, and anything about the PRSP process (descriptions, terms of reference, outputs) that might be helpful to others. Please submit them to [dflandro@worldbank.org](mailto:dflandro@worldbank.org). It is the intention for the technical notes to become available on the internet rather than in paper form.

## Technical Note 3A: Health, Nutrition and Population Lifecycle

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## 1 Introduction to the Lifecycle Approach

A first step in improving health (health, nutrition and population) outcomes of the poor is to *assess health, nutrition and population* outcomes—generally and amongst the poor and other disadvantaged groups in particular. This section uses a lifecycle approach to assess what the key risks, interventions and outcomes are, and describes how they can be defined and measured in practice. Based on such an assessment – and on other implementation and context specific issues -- targets can be set for improvements in health, nutrition and population outcomes for the population as a whole and the poor especially.

The advantages of a life-cycle approach are several. It recognizes that:

- health is cumulative;
- maximum benefit in one age group can be derived from interventions in an earlier age group,
- intervening at one point or a few points is not enough for sustainable improvement of health outcomes among the poor, and
- interventions in one generation will bring benefits to successive generations.

It also allows for better use of scarce resources by facilitating identification of key risks and gaps, and the prioritization of key interventions to help break the poverty-ill health cycle.

The lifecycle approach can be used and applied:

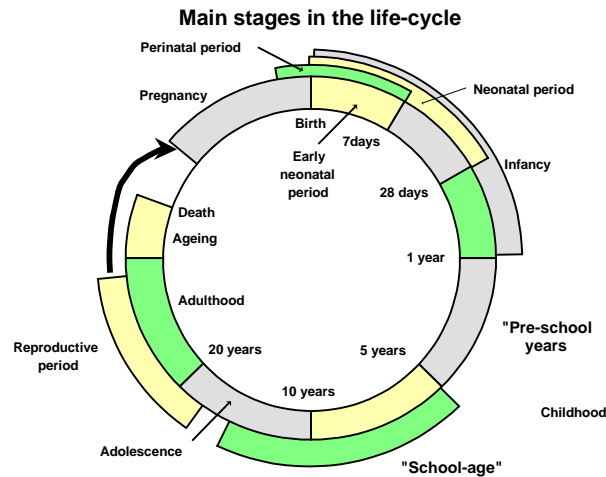
- as an *assessment tool* to identify gaps and neglected risks of the poor at different stages in the lifecycle;
- as a *project planning* tool to facilitate prioritization and selection those interventions that influence critical risks and gaps and that are feasible, affordable, appropriate and cost-effective;
- as an *advocacy and communications* tool in the poverty reduction strategy process to draw attention to the multiple determinants of ill health among the poor;
- to *identify synergetic actions within and beyond the health sector*.

This Annex reviews key risks, interventions and outcomes at different stages of the lifecycle. Particular attention is given to some of the main risks of poverty and to cross cutting problems that affect all stages of the lifecycle. Only evidence-based interventions, that have been tested for effectiveness and feasibility are included. And, only those standard measurements agreed on by technical partners have been included (as of March 2001). This document is **work in progress** and will need to be revised on an ongoing basis and updated as new evidence emerge.

## 1.1 The Lifecycle stages

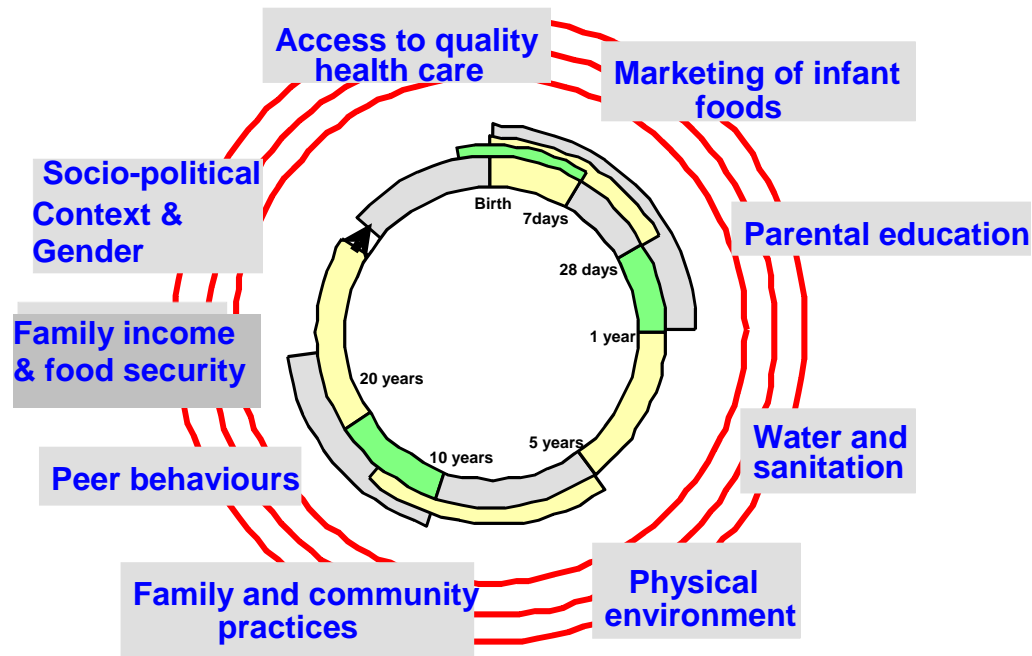
Figure 1 shows the key stages in the lifecycle, starting with infancy, and the pre-school years, moving through the school-age years, adolescence, early adulthood and the reproductive years and periods of pregnancy in the case of women, and late adulthood.

**Figure 1: The main stages in the HNP lifecycle**



At each stage of the lifecycle, there are risks to health, and associated with each is a corresponding intervention and related outcome indicator. For example, during the first year of life (infancy), there are risks of illness, poor nutrition, growth and development, and death. The focus in this Sourcebook is on risks that can be reduced through actions in the health (health, nutrition and population) sector with cross references to other sectors. Many key health problems are influenced by multi sectoral factors as shown in the case of maternal and child health outcomes, Figure 2.

**Figure 2: Multiple External Factors Influence Outcomes of the MCH Cycle**

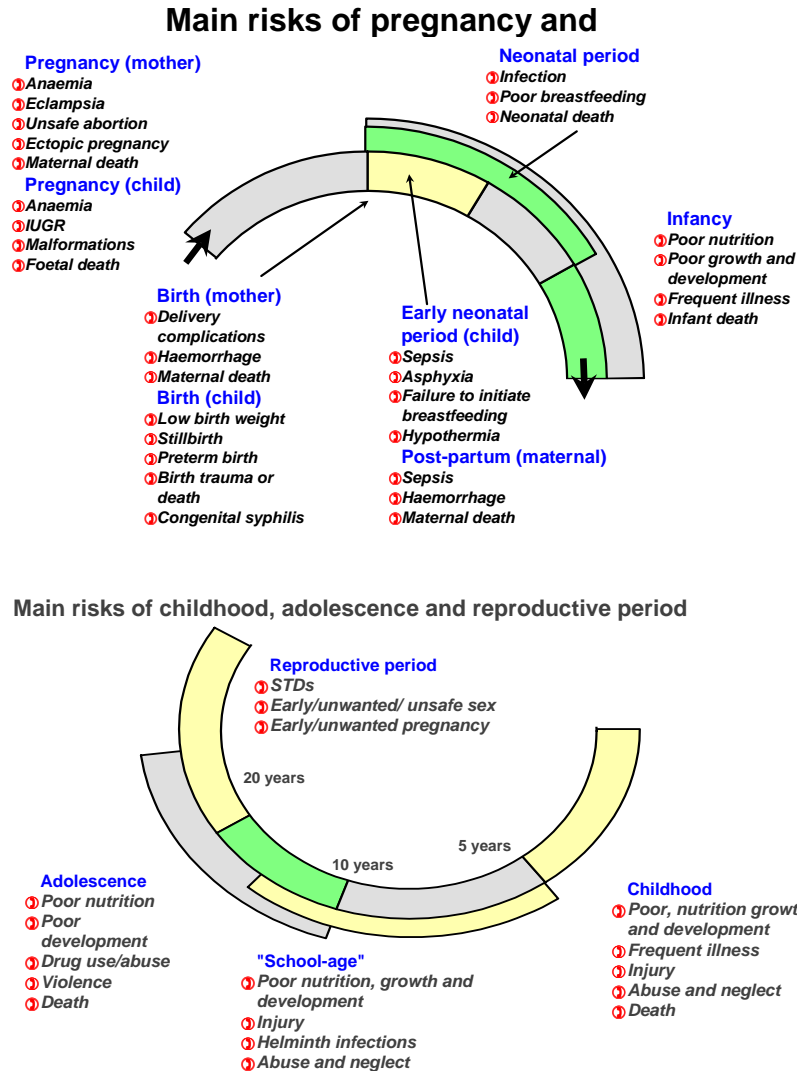


## 1.2 Risks throughout the Lifecycle

Each stage in the lifecycle is associated with particular *risks*. Figure 3 shows some of the main risks to poor individuals over the course of the lifecycle; some of these risks disproportionately affect the poor. The risks in pregnancy and early childhood are shown in the upper part, and those in later childhood years, adolescence and the reproductive periods are shown in the lower part. In addition to the risks highlighted in Figure 3, there are also risks of mortality and morbidity throughout or at later stages of the lifecycle, associated with malaria, TB, HIV/AIDS, and with non-communicable diseases such as accidents and injury, diabetes, cardiovascular diseases, mental illness and cancer. Malnutrition increases the risks of dying from other causes; in children under five in poor communities, malnutrition is associated with 54% of all deaths. Nutritional risks include Iodine Deficiency Disorder (IDD) and Vitamin A Deficiency (VAD) during pregnancy and childhood. Non-exclusive breast feeding is a major nutritional risk factor during the neonatal period. In infancy, growth faltering and poor nutrition, including micronutrient

deficiencies (IDD, anemia and VAD) are some of the critical risk factors of low income populations. Micronutrient deficiency, anemia and poor nutrition are risks throughout childhood, school age, adolescence and the reproductive period.

**Figure 3: Main Risks**



### 1.3 Key interventions and strategies

Main public health and clinical interventions have been identified at each stage of the lifecycle, as shown for the periods of pregnancy and childhood stages in Figure 4. The main nutrition interventions throughout the lifecycle are shown in Figure 5. Those are described in the following sections. How to prioritize among all the key interventions will depend on the major risks identified, the gaps identified in addressing these risks and the status of health, nutrition and population outcomes among the poor. Packaging of

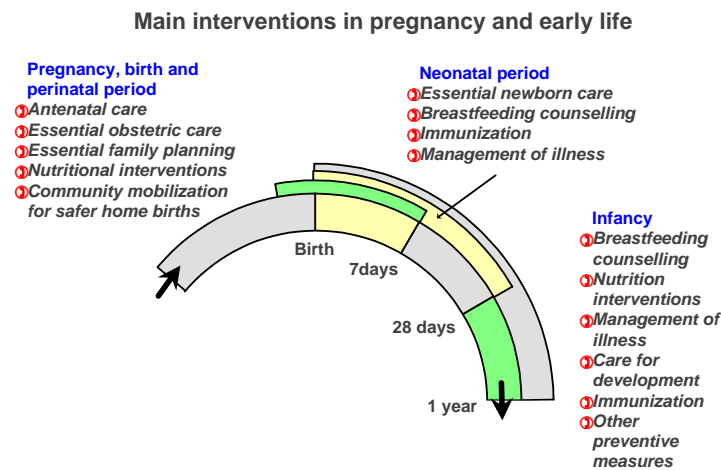
interventions is one strategy for ensuring maximum benefit at a given stage of the lifecycle and to increase efficiency, see Figure 6 for two examples: IMCI (integrated management of childhood illness and FRESH (focused resources on school health). The MINPAK (Nutrition Minimum Package) and IMPAC (Integrated Management of Pregnancy and Childbirth) represent similar sets of basic strategies to address childhood malnutrition through the health sector and the risks during pregnancy and childbirth.

**The *Public Health At-A-Glance* fact sheets prepared by the HNP network (April 2001) provides useful summaries on most of the proposed programs and interventions discussed here, such as, reproductive health, child health including IMCI, school health, malaria, TB, HIV/AIDS, mental health and tobacco.**

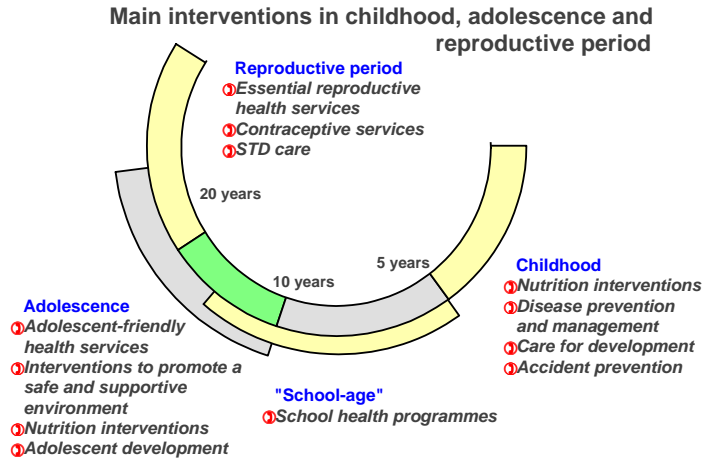
Possible criteria for “prioritizing” problems and to rank “priority” interventions identified throughout the lifecycle are:

- the problem dis-proportionally affect the poor
- the problem can be significantly reduced among the poor;
- the intervention reduces a large problem among the poor as assessed by its prevalence among the poor, or contribution to the burden of disease and disability of the poor, or by its associated mortality or non-health outcomes (i.e., school performance, work productivity) of the poor;
- the intervention strategy is consistent with -- and contributes to -- overall poverty reduction;
- the intervention is **affordable, effective, feasible, cost-effective and culturally appropriate in the target population.**

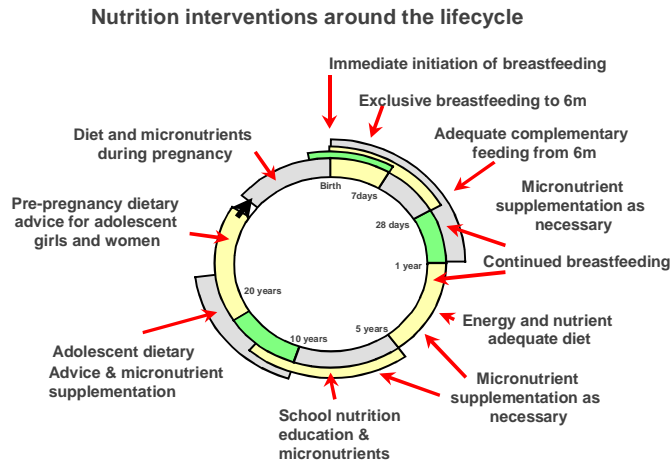
Figure 4: Main Reproductive Health Interventions



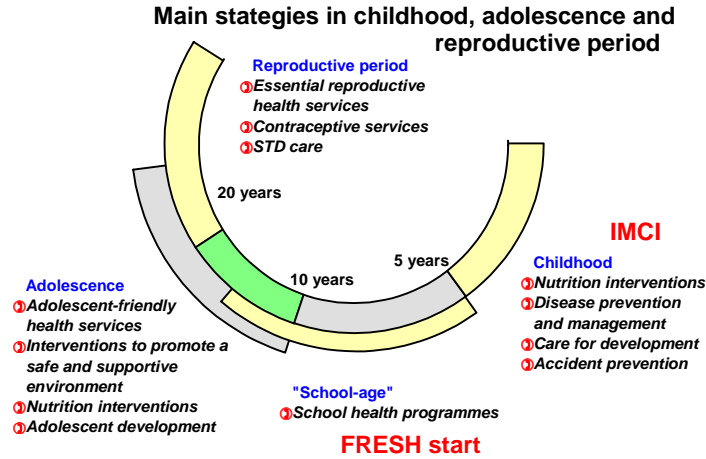




**Figure 5: Main Nutrition Interventions**



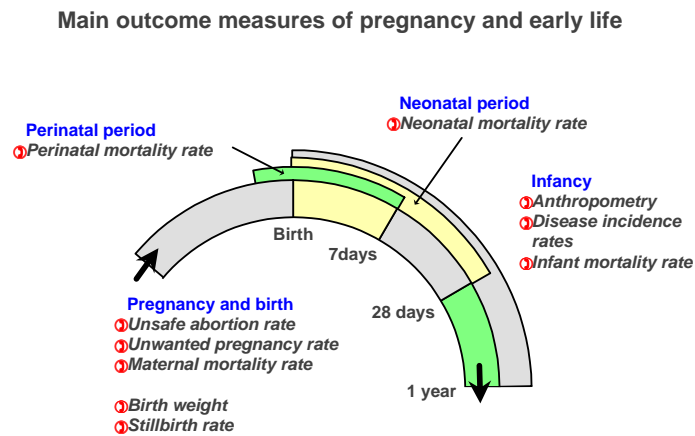
**Figure 6: Two Examples , IMCI and FRESH Start**

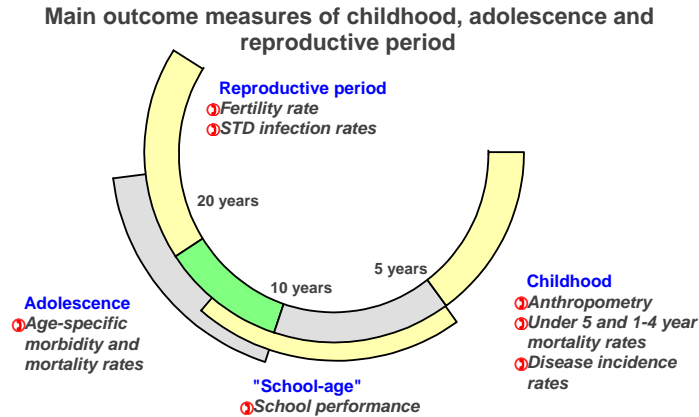


### 1.4 HNP outcome indicators by stage of the lifecycle

Building on the lifecycle approach, Figure 7 shows some of the main HNP outcome measures during pregnancy, early life, childhood, adolescence and the reproductive period of the HNP lifecycle. The definitions of these outcome indicators are discussed in the following sections. Other key indicators during adulthood are also discussed. Indicators of morbidity and health are less frequently encountered in developing countries than in industrialized ones, and are often considered to be subject to reporting biases that vary with economic status and education. Work is ongoing in this area, however. The major anthropometric measurements during childhood are: underweight, stunting and wasting rates.

**Figure 7: Main HNP Outcomes, Selected Periods**





## 2. Reproductive period, pregnancy, child-birth and post-partum/newborn period <sup>2</sup>

**2.1 The main risks: anaemia, IDD<sup>3</sup>, VAD<sup>4</sup>, low weight and inadequate weight gain during pregnancy, unsafe abortion, ectopic pregnancy, infections including malaria, haemorrhage, eclampsia, obstructed labour, and sepsis (maternal); intrauterine growth retardation, preterm birth, asphyxia during labour, hypothermia and infection after birth (baby).**

As seen in Fig. 3 (section 1), the main risks for pregnant women in poor populations are anaemia, malnutrition, malaria, unsafe abortion and ectopic pregnancy. Late in pregnancy, eclampsia and haemorrhage are life-threatening complications, that also may occur during or shortly after childbirth. Obstructed labour is also a major killer as well as post partum infection. HIV/AIDS is, in a few countries, accounting for an increasing number of maternal deaths. For the baby, infection is the major killer during pregnancy (syphilis) and after birth (syphilis or other bacterial infections), often associated with low birth weight (<2500G) due to intrauterine growth retardation and/or preterm birth. During the first minutes of life, asphyxia due to birthing complications can kill the baby if it is not given adequate basic treatment. During the first days of life, cold injury (hypothermia) is a major risk, often interacting with low birth weight or infection. Failure to initiate early and full breastfeeding contributes significantly to this set of events.

**2.2 Core interventions: family planning education and services, safe abortion where legal, post-abortion care, basic antenatal care, and skilled attendant at birth with emergency obstetric care back-up in case of complications, care of post-partum/newborn complications during first weeks after birth.**

The access and quality of maternal health care is essential for maternal-newborn health. Having access to 3-4 antenatal care visits, with the appropriate contents including dietary counseling and provision of anemia and infection control measures, and attendance at birth by a health care provider with midwifery skills, are the most important

<sup>2</sup> Sexually transmitted diseases, and measures to control mother-to-child transmission of HIV are covered in chapter 5.

<sup>3</sup> IDD=iodine deficiency disorder

<sup>4</sup> VAD=Vitamin A deficiency

health care measures to improve maternal and newborn outcomes. The necessary back-up of skilled attendants, in case of serious complications, is the provision of comprehensive essential obstetric care at the district hospital, or “first referral level”.

Increased awareness of the risks in the post-delivery period is also needed: new mothers and children are at increased risk in the first week, and health care workers must know how to treat the main complications during the first few days after birth. In addition, they need to counsel and support for successful establishment of exclusive breastfeeding, provide preventive care such as provision of Vitamin A to women and BCG vaccination to babies, and inform about contraception during and after lactation.

Integrated management of pregnancy and childbirth (IMPAC), currently under finalization by WHO, provides a comprehensive set of tools describing the effective interventions that need to be included in the antenatal, delivery, and postpartum periods, and for post-abortion care. IMPAC is a further development of The Mother-Baby Package (WHO 1994).

Raising awareness of important issues affecting maternal and infant health and nutrition is a critical part of the process of changing behaviors and improving women’s health. Women and their families need information on prevention and treatment of STDs including prevention of HIV/AIDS, family planning, healthy pregnancy, and safe childbirth. Community mobilization around key messages – ensure adequate diets for women during pregnancy; recognize and act on danger signs in pregnancy; plan in advance where and with whom to give birth, plan for emergency transport; protect oneself against STDs/HIV - will contribute to improved birth outcomes and women’s health.

Being able to choose when and with whom to have a child improves outcomes for mother and child. Early adolescent pregnancies are often a result of sexual abuse, rape or coercion. For all women, access to affordable contraceptive services, with contraceptive counseling and reasonable contraceptive choices, have a major health impact. Unwanted pregnancies may lead to unsafe abortion; child neglect, malnutrition and increased susceptibility to disease; and dropping out from school.

For adolescents, the design and implementation of “youth-friendly” services are particularly important, in order to effectively reach teenagers in need with information and service provision on STDs, family planning, and pregnancy care.

**2.3 Major outcomes: *Maternal mortality, maternal morbidity, perinatal mortality, Low birth weight rate, breast-feeding rate, teenage pregnancy rate, incidence of incomplete abortion..***

#### **A. Quantitative outcomes**

##### *Maternal mortality.*

The number of maternal deaths is a composite indicator of maternal health and nutrition status, skilled attendance during labor and delivery, access to lifesaving health care services in the event of an obstetric emergency, and iatrogenically induced mortality. It is commonly expressed as the Maternal mortality ratio (MMR), i.e. the number of maternal deaths per 100,000 liveborn. Maternal deaths can also be expressed as case-fatality rates (proportion of women who are treated with a certain complication who die), or as life-time risk of maternal death (which reflects both fertility and the risk once pregnant).

*Maternal morbidity.*

Maternal ill-health includes a number of different morbidities directly related to pregnancy and childbearing. Serious and frequently permanent disabling conditions include fistula (abnormal opening between bladder or rectum and vagina permitting continuous leakage of urine and/or feces as a result of prolonged obstructed labour), and infertility. Debilitating but potentially transient conditions include anemia, vitamin A deficiency, and low weight. Prevalence of anemia and low BMI are commonly used objective indicators to assess maternal morbidity.

*Perinatal mortality, PNMR.*

PNMR encompasses all stillborn babies above 28 weeks of gestational age, and all newborns showing any signs of life but dying before 7 days of age. The primary determinants of perinatal mortality include poor maternal nutrition, infections, birth injuries/birth asphyxia, and congenital defects.

*Low birth weight prevalence (LBW)*

Infants born with low birth weight in developing countries are primarily children who have suffered from reduced rate of fetal growth or intrauterine growth retardation (IUGR). LBW is defined as a birth weight below 2500 g at full-term or below the 10 percentile for gestational age within a population. Babies born too early (delivery <37 completed weeks of gestation) also exhibit LBW, but prematurity as the primary cause of LBW is found more commonly in industrialized countries. Maternal infection (malaria, HIV/AIDS, urinary tract infection) and undernutrition are the main determinants of IUGR in developing countries.

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 Note: On the above indicators – neither maternal mortality nor severe morbidity levels are useful to capture program impact in a short time period (3-5 years) – as maternal deaths are rare events even in high mortality settings, and capturing morbidity has proved extremely difficult, whether asking health professionals or women. The sample sizes needed to detect significant change are too large (and therefore expensive) to be practical. Process indicators such as **% pregnant women with any antenatal care, % women with skilled attendance at birth, and number of facilities providing basic (bEOC) and comprehensive essential obstetric care (cEOC)/500,000 population<sup>5</sup>** are commonly accepted indicators of access and to a certain extent, quality of care.

**B. Qualitative outcomes**

Positive qualitative outcomes include having a child that is wanted and welcome; exclusive breastfeeding being established; positive bonding between the mother and her newborn; and (re)integration of the healthy mother and her baby into the supportive family. At first birth the “transitional passage” from recently having been a young, unwed girl, to becoming a mother and partner, is an important social process. Optimal growth and development of the young child will to a large extent depend on the skills and caring

<sup>5</sup> Essential Obstetric Care is defined by two indicators differentiating availability of care at different levels of the health care system:

*Basic essential obstetric care* services at the health centre level should include at least assisted vaginal delivery, parenteral antibiotics, parenteral oxytocic drugs, parenteral sedatives for eclampsia, manual removal of placenta, manual removal of retained products.

*Comprehensive essential obstetric care* services at the district hospital level (first referral level) should include all the above plus surgery, anaesthesia, and blood transfusion.

For the services at a facility to be considered functional, the elements of care must have been provided during the 6 months previous to data collection.

WHO, UNICEF and UNFPA recommend that at least 1 facility providing cEOC and 4 providing bEOC should be available around the clock per 500,000 population.

capacity of the mother, which in turn are dependent on a supportive environment (social support by family, poverty, woman's education and position in society, women's rights and autonomous decision-making etc).

Negative qualitative outcomes include young maternal age at first birth, unwanted pregnancy, illegal and dangerous abortion, and discrimination and abuse of the woman before or during pregnancy. Domestic violence is common in all societies, and usually only one expression of male dominance and oppression. New data also indicate that violence during pregnancy may lead to Low birth weight.

Negative qualitative maternal-newborn health outcomes also include the adverse outcomes of health care, be it traditional or modern health care. Nutritional taboos, and unhygienic practices around childbirth are among the former; while over-medicalization, overuse of surgical procedures ("Cesarean epidemic"), alienation/isolation during birth, hospital infection and disturbing the initiation of full breastfeeding are among the latter.

## 2.4 Policy and strategy issues

The main policy and strategy issues to address can be summed up as follows:

- National, long-term commitment to reduction of maternal and newborn morbidity and mortality is necessary, and must be reflected in policy and in coherent long-term planning. Reducing maternal mortality requires a functioning health system, and strengthening such systems takes time. The success stories of China, Malaysia, Sri Lanka or, more recently, Honduras, have evolved over one to several decades. Conversely, health systems that function improve health in other areas too; and MMR can be seen as a litmus test of a country's health system.
- Legislation on minimum age at marriage and first birth contributes to maternal health in combination with policies that contribute to the implementation of such laws: girls' access to education and income generation activities; protection of women against violence and coercion; information and access to contraception.
- Implementation of a country's abortion laws, and international commitment to post-abortion care influences maternal health: is abortion safe and accessible where legal; and is access to post abortion care accessible/being expanded?<sup>6</sup>
- Provision of contraceptive counseling and provision is essential, improving both contraceptive choices and access. This implies increasing contraceptive access for women, men and adolescents.
- Coherent national planning to gradually expand access to skilled attendant at birth for all birthing women is a key element of safe motherhood programs. This includes improving access to essential antenatal care.

Increasing access to care of obstetric emergencies (during pregnancy, birth, post partum or post abortum) by providing at least four functioning facilities providing

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<sup>6</sup> Post-abortion care (PAC) – care of abortion complications irrespective of cause – includes adequate medical treatment including evacuation of the uterus (best by vacuum aspiration, also by specially trained mid-level health care providers); contraceptive counseling and provision; and non-discriminatory care. Almost all countries committed themselves to providing such care at ICPD, Cairo, in 1994.

bEOC and one providing cEOC/500,000 population is a yardstick for a minimum of maternal care.

- Consistent use of reviews of individual maternal deaths is a good way for continuous fuelling of national and community commitment; and for learning from each death.
- Evaluation and monitoring the above interventions as indicated is crucial for progress, particularly in the light of the long-term efforts needed; and the difficulties in measuring the outcome (maternal mortality) directly.

**2.5 Other external factors:** *improving women's rights, diminishing violence, legislative issues; drug use; user fees; communication and transport.*

Interventions to improve women's status and rights will influence the attention given to women's health in general and maternal health in particular. This is reflected in legislation and its reinforcement, also against violence and abuse of women. Increasing access to education for girls is one of the keys to improving the status and rights of women. Women's physical work load during pregnancy greatly influences nutritional status.

Abortion laws also influence women's health: is abortion legally available on request; on certain indications, or not at all? As abortions occur in every society, many illegal procedures will occur where there is no legal room for abortion, with ensuing effects on maternal mortality and morbidity. Post-abortion care has been accepted by almost all countries, and should be accessible for all women irrespective of cause of abortion. Laws and policies on minimum age for marriage are also important, both for maternal and newborn health. Interventions to reduce women's use of drugs, alcohol, and tobacco also improve newborn health.

Financing schemes and exemption of maternal health care from user fees will to a great extent determine the access of poor women to essential maternal and family planning services.

A critical component in efforts to improve maternal health is the need for communication between health facilities, and transport in cases of obstetric emergencies. Where transport mechanisms cannot be ensured by the health system, communities must become involved in implementation of community-based emergency evacuation schemes.

**2.6. List of useful tools**

1. WHO: Mother-Baby Package (1994).
2. WHO: Essential elements of Obstetric care at the first referral level (1991).
3. WHO: Safe Motherhood Needs Assessment (1996).
4. PAHO: Guidelines for maternal mortality epidemiological surveillance (1998).
5. Mothercare: Assessing Safe Motherhood in the Community (1998).
6. WHO: Care of Mother and Baby at the Health Centre: a practical guide (1994).
7. Maine D et al; Maternal mortality: guidelines for measuring progress. New York: WHO/UNICEF, 1996.
8. WHO: Midwifery education. Education material for teachers of midwifery. 5 modules on life-saving skills plus student notes (1996).

9. WHO: Managing complications in Pregnancy and Childbirth: a guide for midwives and doctors. IMPAC(2001).
10. WHO: Essential Care practice guides for maternal and newborn care. IMPAC Integrated Management of Pregnancy and Childbirth (IMPAC). In finalization (2001).
11. The LINKAGES Project (AED): Maternal nutrition: Issues and interventions (2000).
12. Huffman, SL et al. Essential health sector actions for maternal nutrition in Africa. (Draft, 2000).
13. WHO. Evidence for the Tens Steps to Successful Breastfeeding. Geneva, 1998. Some tools (monitoring, costing, needs assessment) are available online from WHO ([www.who.int/rht/publications/alphabetical\\_listing.htm](http://www.who.int/rht/publications/alphabetical_listing.htm)) and a separate page describes indicators [www.who.int/rht/msm/msm\\_indicators.htm](http://www.who.int/rht/msm/msm_indicators.htm). The Safe Motherhood website [www.safemotherhood.org](http://www.safemotherhood.org) has an annotated resource guide and UNICEFs [www.unicef.org](http://www.unicef.org) also provides valuable information. In WHO, contact Monir Islam on tools and norms ([islamm@who.ch](mailto:islamm@who.ch)), and in WB Jerker Liljestrand.

### 3 Childhood (from two weeks – five years)

#### 3.1 The main risks: *infections, poor breastfeeding, poor nutrition, poor growth and development, frequent illness*

As described in Fig 3, (section 1) the main risks in the neonatal period include infections and poor breastfeeding contributing to the high neonatal death rates among poor communities. Serious *infections* in young infants up to 2 months of age in developing countries were recently studied in a multicenter collaborative effort including Papua New Guinea, The Gambia, Philippines, and Ethiopia. The results showed that 10% of the neonates died and that the majority of infections were bacterial.<sup>7</sup> In this study, the signs and symptoms predicting serious infections were identified and are being included in simple case management guidelines.

*Best practices in breastfeeding* include immediate and exclusive breastfeeding, which is very important for the prevention of neonatal mortality. In most African countries with available evidence, less than 50% of mothers breast feed their babies within the first hour of life, and less than 70% do so within 24 hours of birth. However, over 80% women report delaying breastfeeding beyond one hour after delivery in Bangladesh, El Salvador, Indonesia, Mali Nepal, Pakistan, and over half women delay breastfeeding beyond 24 hours postpartum.

Exclusive breast feeding rates vary significantly. Available evidence from African countries indicate that rates are as low as 2% in Nigeria, and as high as 78% in Madagascar.<sup>8</sup> Infection rates in the first week of life among newborns are lowest in children exclusively fed with raw human milk when compared to children given pasteurized human milk and formula.<sup>9</sup>

In infancy and childhood, malnutrition, including micronutrient deficiencies, which are manifested in growth faltering (stunting, underweight and wasting), retarded cognitive

<sup>7</sup> WHO Young Infant Study Group. Bacterial etiology of serious infections in young infants in developing countries. *Pediatr Infect Dis J* 1999;18:S17-22.

<sup>8</sup> Huffman SL, Zehner ER, Harvey P, et al. Health sector actions to improve maternal nutrition in Africa. LINKAGES. Academy for Educational Development. 2001.

<sup>9</sup> Narayanan I, Prakash K, Murthy NS, et al. Randomised controlled trial of effect of raw and pasturized human milk and of formula supplements on incidence of neonatal infection. *Lancet* 1984;2(8412):1111-3.



development, and susceptibility to diseases, are important risks. A child's physical growth has positive effects not only on morbidity and mortality, but also on improvements in school achievement and work capacity.<sup>10</sup> An optimal nutritional status contributes to ensuring appropriate immune response to infectious diseases and child psychological development. More than 50% of all childhood deaths in children 6 months to five years are related to malnutrition's potentiating effects on infectious disease.<sup>11</sup> Even mild and moderate malnutrition is a threat to survival. The majority of deaths (76-89%) associated with malnutrition occur in children who are only mildly or moderately malnourished<sup>12</sup>. Many children who die due to pneumonia or diarrhea would not have died if they had not been malnourished.

*Frequent illness* is a major risk in infancy and childhood, particularly in low income countries and among the poor population where prevalence of infectious diseases is highest. The main killer diseases include malaria, pneumonia, diarrhea, and measles. More evidence is needed on abuse and neglect of children.

### **3.2 The core interventions in childhood: essential newborn care, immunization, integrated management of childhood illness, essential nutrition interventions, care for development, other preventive measures**

*Essential newborn care* is not included here, but included in IMPAC (Integrated Management of Pregnancy and Child Birth) and in the Safe Mother-Baby package mentioned in Section 2.

*Immunization* is an essential preventive health service during the first year of life. Vaccine preventable deaths are discussed in more detail in section 3.4. Data on immunization rates amongst children aged 12-23 months for measles, DPT and polio are available in the Bank's HNP Poverty Information Sheets by economic status for 48 countries (see Appendix 2). These sheets show large variations across countries in both the average proportion of children who are fully immunized and the gap between poor and better-off households in immunization coverage. On the whole, countries that do well on the first also do well on the second. For example, in Chad only 10% of children are immunized, and there is a large gap between poor and better-off households, whilst in the Kyrgyz Republic, nearly 70% of children are immunized, but the gap between poor and better-off households is very small. There are exceptions to this pattern. India, for example, has a much larger gap between poor and nonpoor households than Pakistan, but achieves roughly the same overall coverage. Similarly, Mozambique has a much wider gap between poor and nonpoor households than Uganda, but achieves the same overall level of coverage. The overall rate of immunization coverage can thus give a seriously misleading picture of immunization coverage amongst poor households.

*Integrated Management of Childhood Illness.* Management of illness has been a cornerstone of childhood mortality reduction caused by diarrhea and pneumonia. Most diarrhea cases can be treated with oral rehydration therapy (ORT), and caretakers can learn the basic rule for home treatment (fluid and feeding and appropriate care seeking) of diarrhea. Similarly, a meta-analysis of interventions trial on case management of pneumonia in community settings has shown that the effectiveness of appropriate

<sup>10</sup> Martorell R. Promoting healthy growth: rationale and benefits. In: Pinstrup P, Pelletier D, Aldman H eds. Child growth and nutrition in developing countries. Ithaca, NY Cornell University Press, 1995.

<sup>11</sup> Pelletier et al. Epidemiological evidence for a potentiating effect of malnutrition on child mortality. AMJ Public Health, 1993;83:1130-33.

<sup>12</sup> Pelletier D et al. A methodology for estimating the contribution of malnutrition to child mortality in developing countries. The Journal of Nutrition, 1994;124 No. 10S: 2106S-2122S.

antibiotic treatment in developing countries resulted in an estimated 35% reduction in infant deaths and 53% reduction in under-five mortality caused by respiratory infections.<sup>13</sup> Care seeking behavior is important for both diarrhea and pneumonia as mortality is associated with delayed presentation to health facilities. Recently, based on research findings that there is a significant clinical overlap of several major childhood illnesses,<sup>14</sup> a new strategy, called Integrated Management of Childhood Illness (IMCI), was developed by WHO and UNICEF.<sup>15</sup> This new strategy addresses the case management of diarrhea, pneumonia, malaria, measles and malnutrition; it includes appropriate, and when needed, combined, treatment of major childhood illnesses with aspects of nutrition -- in particular nutrition education and micronutrient supplementation -- immunization and disease prevention interventions and health promotion elements.<sup>16</sup> The strategy also aims for improved counseling of caregivers, and for improved quality of care to sick children at the referral level. In the home setting, it promotes improved nutrition and preventive care, appropriate care-seeking behavior, and correct implementation of prescribed care. Finally, it results in cost savings<sup>17</sup> and increased efficiency in resource utilization.

*Essential nutrition interventions.* Cost effective, feasible and widely applicable nutrition interventions are those that protect, promote, and support six priority nutrition outcomes, namely exclusive breast feeding for about six months; appropriate complementary feeding and continued breast feeding for two years, adequate nutritional care during illness and severe malnutrition, adequate vitamin A intake, adequate iron intake, and adequate iodine intake. The key strategies through which these outcomes are addressed are summarized below. More information is provided in the resources indicated.

*Breastfeeding promotion.* Best practice is exclusive breastfeeding to about 6 months of age. Interventions to promote breastfeeding are included in the WHO/UNICEF Baby Friendly Hospital Initiative (BFHI) and best practices for maternity centers to support breastfeeding have been developed, summarized in ten essential steps and disseminated widely.<sup>18</sup> They include training of health care staff, providing information to pregnant women about the benefits of breastfeeding, helping mothers to initiate breastfeeding within the first hour of birth, and encouraging exclusive breastfeeding. A recent pooled analysis of 6 randomized trials, showed that training in breastfeeding counseling leads to increased duration of breastfeeding.

*Child Growth Promotion.* Child growth promotion is a key nutrition action because it makes malnutrition visible, provides basic information for households and communities to act and demand action and thus leads to more appropriate actions – central among these are changes in practices related to feeding, child care and health care seeking. Growth monitoring in itself will not improve nutrition, it is the promotion part – good communication for behavior change- that brings about change. For maximum impact child growth promotion should support and lead to decision-making at three levels:

<sup>13</sup> Sazawal S, Black RE. Meta-analysis of intervention trials on case management of pneumonia in community settings. *Lancet* 1992;340:528-33.

<sup>14</sup> English M et al. Clinical overlap between malaria and severe pneumonia in African children in hospital. *Trans Royal Soc Trop Med Hyg* 1996;90:658-62.

<sup>15</sup> Gove S. et al. Integrated management of childhood illness by outpatient health workers: technical basis and overview. *WHO Bull*, 1997;75(Suppl 1):7-24.

<sup>16</sup> Tulloch J. Integrated approach to child health in developing countries. *Lancet*, 1999;354(Suppl 2):16-20.

<sup>17</sup> Boulanger LL, Lee LA, Odhacha A. Treatment in Kenyan rural health facilities: projected drug costs using the WHO-UNICEF Integrated management of childhood illness (IMCI) guidelines. *WHO Bull* 1999;77(10):852-8.

<sup>18</sup> World Health Organization. Evidence for the ten steps to successful breastfeeding. Geneva, WHO, 1998, WHO/CHD/98.9.

1. recommendations for individual children's care,
2. activity plans for the community to support families to maintain the growth of their children, and
3. program activities that bolster community actions that affect households with special needs such as income-generating or transfer schemes.

Child growth promotion is best suited to programs with a preventive approach because it catches growth faltering, an early sign of health and nutrition problems. Growth promotion offers an excellent opportunity for communities and caretakers to understand and take action to prevent poor child growth, when the causes of inadequate growth are analyzed together with them. Frequent (monthly) monitoring should begin at birth and last for 18-24 months. Families have a role to play in decision making for action to improve child feeding practices in the process of **nutrition negotiation**. In this process, the mother and health worker agree to mutually acceptable actions or behaviors that will be implemented in the household for improved child nutrition. While these actions may not be ideal practice, they are considered reasonable by the mother and actions that will contribute to better health and nutrition status by the health worker<sup>19</sup>.

**Communication for behavioral change. *Nutrition education can promote children's physical growth.***<sup>20</sup> ***A recent review of data from 12 developing countries, found that successful nutrition education programs included appropriate messages through interpersonal communication by local workers with reinforcement through mass media.***<sup>21</sup> ***Another review of five efficacy trials and sixteen effectiveness evaluations identified factors associated with program success: nutrition education programs should address the changing needs of the infant and young child, build on current local practices, and describe not only what, but also how to feed infants.***<sup>22</sup>

Many nutrition education efforts have however not proven to be very effective, because the focus was on supplying nutrition information, rather than on changing behavior. They give technically correct and easy-to-understand nutrition education messages that people do not put into practice because of their own beliefs or perceptions or those of people close to them, or because of some real or perceived practical problem. In contrast, behavior change communication (BCC) addresses the multiple reasons why a behavior may not be practiced – whether they are purely practical constraints, social norms, or cultural perceptions and indicates convincing ways to overcome resistance and to motivate desired practices. This may require different communication activities, using both interpersonal and mass-media communication.

BCC at home or community level is an effective approach to preventing malnutrition if food or drugs are available and affordable, and quality of care is good. Formative research can discover the clients' perspective by dissecting barriers of service utilization,

<sup>19</sup> For detailed guidelines on GMP program design and implementation, consult the Nutrition Tool No.4. Promoting the Growth of Children : What Works. The tool also presents case examples from renowned large-scale nutrition projects, (UPGK in Indonesia, NNP in Thailand, TINP in India, and Iringa in Tanzania) to illustrate effective uses of growth promotion.

<sup>20</sup> World Health Organization. Complementary feeding of young children in developing countries: a review of current scientific knowledge. WHO/NUT/98.1

<sup>21</sup> Asworth A, Feachem RG. Interventions for the control of diarrhoeal diseases among young children: weaning education. WHO Bull 1985;63:1115-27.

<sup>22</sup> Caulfield LE, Huffman S, Piwoz E. Interventions to improve complementary food intakes of 6-12 month old infants in developing countries: Impact on growth, prevalence of malnutrition, and potential contribution to child survival. 1998 Academy of Educational Development Linkages Program, Washington DC.

suggesting needed modifications in the services themselves, as well as revealing key communication messages and strategies to help overcome barriers.<sup>23</sup> Box 3 gives the example of the positive deviance approach developed by Save the Children – UK for promoting new behaviors.

BCC messages in the media (television, newspapers, seminars) can be employed to make policy makers more aware of the magnitude of nutrition and health problems, of the many immediate and secondary (including economic) benefits of improving nutrition and health and of the potential effect action taken by them such as supportive legislation, enforcement, or funding have on individual practices and in improving nutrition outcomes.

**Box 3: Hearth Nutrition Model based on the Positive Deviance Approach<sup>1</sup>**

Positive deviance in nutrition describes young children who grow and develop adequately in poor families and communities, where a high number of children are malnourished and frequently ill. Their families have developed culturally appropriate positive practices that enable them to succeed in nourishing and caring for their children in spite of poverty and an often high risk environment.

The positive deviance concept is used as a method for discovering affordable and nourishing local foods that mothers/ caretakers can give to their children as well as a communication method to convince mothers of malnourished children that an affordable solution exists. The Nutrition Education and Rehabilitation Sessions focus on changing or promoting new behavior rather than transferring knowledge through the following learner-centered strategies:

- learning by doing; involving caretakers in modeling the good practices
- requiring caretakers to contribute food to the NERS sessions
- using peer support to encourage new habits

This concept has successfully been applied in Vietnam, Haiti, Nepal and is currently being implemented in Bangladesh and Mozambique.

**Micronutrient interventions. *Micronutrient interventions are among the ten least expensive child health interventions. Micronutrients, including iodine, iron, and vitamin A, can reduce the risk of morbidity and mortality. A meta-analysis of eight mortality trials established that improving the vitamin A status of children aged six month to five years can reduce overall mortality rates by 23%.<sup>24</sup> In Brazil vitamin A supplementation reduced severe episodes of diarrhea by 20%.<sup>25</sup> Efficacy trails on other micronutrients, including zinc, and multiple micronutrient formulations are ongoing, but large scale implementation awaits further information. Combinations of three main strategies (increased dietary intake, food fortification and direct supplementation) are the most frequent approaches used to prevent micronutrient deficiency diseases.***

Strategies to prevent and treat vitamin A deficiency (VAD) include the promotion of the consumption of vitamin A rich food<sup>i</sup>; promotion of exclusive breast feeding, preventive supplementation of children 6 to 59 months every six months- often combined with immunization efforts in the EPI Plus program, high-dose vitamin A supplementation to

<sup>23</sup> World Bank Nutrition Tool no.9. Using communication to improve nutrition.

<sup>24</sup> Beaton GH, Martorell A, Aronson K, et al. Vitamin A supplementation and child morbidity and mortality in developing countries. Food and Nutrition Bull 1994;15(4):182-9.

<sup>25</sup> Barreto, ML, Santos LM, Assia AM, et al. Effect of vitamin A supplementation on diarrhea and acute lower respiratory tract infections in young children in Brazil. Lancet 1994;344:228-31.

children with measles, severe malnutrition, prolonged diarrhea, and other infections, and the treatment of clinical VAD with high-dose vitamin A.

To prevent iodine deficiency, universal salt fortification is the preferred, most cost-effective option. Major advancements have been made in salt iodization and the target of universal salt iodization is within reach in many countries. In communities with endemic iodine deficiency and little or no access to iodized salt, short-term supplementation of women of reproductive age and children with iodized oil may still be necessary.

For the first six months of life, normal weight infants' iron needs are met through exclusive breastfeeding. Early introduction of formula or other animal milks may damage the infant's gut, leading to iron deficiency. After six months, iron sources in addition to breastmilk are necessary to maintain normal iron status. These can be in the form of iron-rich animal products such as liver, fortified complementary foods such as rice or wheat cereal with iron added during processing, or iron supplements (liquid drops or crushed tablets). Low birth weight babies (weighing <2500 g at birth) have smaller body iron stores and need to be supplemented with iron from two months of age. Iron supplementation programs for young children should be linked with regular health services and immunization. More basic information concerning micronutrient interventions can be found in the WB Nutrition Tool no 2: Basic Facts, and in references listed below.

**Food supplementation. *In micro-level, community-based efficacy trials supplementary feeding has enhanced childhood physical growth in Indonesia, Jamaica, and Guatemala. Evaluations of large-scale food supplementation programs, however, are more controversial because the supplements often do not reach the intended targets. One meta-analysis found that of nine trials reviewed, four showed significant impact on physical growth, whereas the remaining five did not include information to verify that the supplementation actually reached the target children.***<sup>26</sup>

Supplementary feeding is best considered in addition to, but not as a substitute for, the above nutrition interventions, in situations where inadequate access to food by vulnerable groups [pregnant and lactating women, children 6 months to 2 years] in food insecure households is a cause of malnutrition. While food supplementation can serve as an incentive to attend health clinics and as an 'educational tool' to improve capacity to care for children and women in the household, its high costs and risks suggest that other means to increase attendance or improve caring practices should first be considered.

Food supplementation of vulnerable people cannot substitute for measures to address household food insecurity, and should therefore be accompanied by safety net measures, such as food stamps<sup>27</sup>, income transfers, income generation for women, asset generation, etc. Transparent entry and exit criteria add to the effectiveness of

<sup>26</sup> Husaini MA, Karyadi L, Sandjaja KD, et al. Developmental effects of short term supplementary feeding in nutritionally at risk Indonesian infants. *Am J Clin Nutrition* 1991;54:799-804.

Walker SP, Powell CA, Grantham McGregor SM., et al. Nutritional supplementation, psychosocial stimulation, and growth of stunted children: the Jamaican study. *Am J Clin Nutrition* 1991;54:642-48.

Rivera JA, Martorell R, Ruel MT, et al. Nutritional supplementation during the preschool years influences body size and composition of Guatemalan adolescents. *Journal of Nutrition* 1995;125:(4S):1068-77.

Beaton GH, Ghassemi H. Supplementary feeding programs for young children in developing countries. *Am J Clin Nutrition* 1982;35:863-916.

Habicht JP, Butz WP. Measurement of health and nutrition effects of large-scale nutrition intervention projects. In: Klein R et al. *Evaluating the impact of nutrition and health programs*. Plenum Publishing Corporation, 1979:133-82.

<sup>27</sup> See Nutrition Tool no. 6: Food Stamps and Related Nutritional Safety Nets.

supplementary feeding programs, which should be targeted to children under two, and pregnant and lactating women. It is important to make sure that the technical and operational capacity for regular delivery of adequate food rations (quantity and quality) exists, as the lack of it is one of the most common causes of program failure. More information on factors to consider in the design of supplementary feeding programs is provided in Nutrition Tool No. 5: Food Supplementation for Women and Young Children.

*Care for development.* Traditionally interventions to improve child's development have focused on center-based education of children, home visits, or other activities to improve parenting skills and stimulation within the home, including nutrition. However, a recent review of the benefits of investing in early childhood care and development programs, as well as programs to improve child physical growth has suggested that combined interventions to improve both physical growth and psychological development have the greatest impact when targeted at disadvantaged populations.<sup>28</sup> In addition, the review points to the fact that interventions during the earliest period of life—prenatally, during infancy and early childhood—are likely to have the greatest impact. Programmatic implications are not easy to define. A model for combined interventions needs to be developed. As a working model, the authors propose a culturally adaptable counseling package that combines nutrition counseling on complementary feeding with counseling on psycho-social care (e.g. warmth, attentive listening to the child, proactive stimulation, and support for exploration and autonomy). Such a package has been tested in Brazil and will soon be tested in two countries in Africa (Zimbabwe and Eritrea).

*Other preventive measures include handwashing, safe disposal of young infants stool, safe infant and young child feeding practices, use of latrines, availability and use of plenty of clean water.* Tabulated data—especially by economic status—on these *other key interventions and HNP behaviors* in infancy are harder to come by, but information on some (e.g. breastfeeding, sanitary practices) are often available in surveys such as the Demographic and Health Survey and could be tabulated along the same lines as the Bank's Information Sheets

### 3.3 Major outcomes in childhood

A set of key indicators for childhood are shown at the end of this section, in Table: *PRSP HNP Core Indicators, Lifecycle; Childhood segment*. It includes a list of standard household and health facility indicators. The Bank's HNP Poverty Information Sheets present data by economic status for 48 countries on the proportions of under-five children (a) with diarrhea receiving ORT and (b) with ARI taken to medical facility for treatment (see Appendix). These numbers indicate large variations across countries in both the average proportion of children who receive ORT or are taken to a medical facility, and the gap between poor and better-off households. No other information on HNP behaviors relevant to childhood are included in the Bank's Information Sheets. However, many surveys, such as the DHS, contain information on the treatment and prevention of childhood illnesses as well as information on household living standards, and could therefore be tabulated along the same lines as in the Bank's sheets.

Infancy. The *infant mortality rate* (IMR) is available in most countries, though in many cases it is estimated from surveys that are usually undertaken less frequently than once a year. The IMR is one of the five international development indicators. It is available in the World Bank's HNP Poverty Information Sheets, separately for the five economic

<sup>28</sup> A critical link. Interventions for physical growth and psychological development – a review. Geneva 1999. WHO/CHS/CAH/99.3

status quintiles in each of 48 countries (see Appendix). These sheets show higher rates amongst poorer households, though the size of the gradient varies from one country to the next. Measures of malnutrition—such as underweight and stunting—are often available in household surveys and, although tabulated data by economic status are not available specifically for infants, these tabulations could be done using the methods employed in the Information Sheets (see Appendix).

Childhood. The *under-five mortality rate* (U5MR) is available in most countries, though, as with the IMR, it is often estimated from surveys that are usually undertaken less frequently than once a year. The U5MR is one of the five main HNP outcome indicators.

The *proportion of underweight* under-five children is also available for many countries, and is one of the proxy indicators of economic well-being. In addition, many countries also have data on *stunting* and *wasting* amongst children under five years of age. The U5MR and the proportions of young children who are underweight, wasted and stunted are available in the Bank's Information Sheets. Nutrition—in terms of food intake and calories—is also a key indicator in childhood. It is often difficult to measure the food intake of individual household members in surveys, but many surveys, such as the LSMS surveys and the surveys undertaken by the International Food Policy Research Institute (IFPRI), increasingly assemble such data. These sheets also contain information, by economic status, on *diarrhea and ARI prevalence* amongst children under five years of age. However, diarrhea and ARI (disease) incidence is more useful to measure than prevalence, and is often analyzed in household surveys. For the most part, higher rates of mortality, malnutrition and disease are found amongst poorer households, but the size of the gradient varies across countries.

*Child development* outcomes are probably among the most important outcomes for a society, as they greatly influence children's educational achievements, and later in life, working performances (See School health).

### 3.4 Policy and strategy issues

The IMCI strategy includes three components: health system, health facility and community/household levels. Within the IMCI strategy a key component is the strengthening of communities and families to provide necessary care to improve child survival growth and development. Key family practices to improve child health and nutrition outcomes have been identified and agreed on among agencies supporting child health and nutrition at household level (the indicators are listed in Table PRSP HNP Core indicators; lifecycle: childhood segment )

Actions within the community to support these key family practices include, for example, breastfeeding support groups or using opportunities such as community events to educate families. Community groups can help prevent illness by making insecticide treated bednets accessible to families and by maintaining a clean environment.

WHO's Topical List of Priority Indicators for IMCI at Facility and Household Level is a valuable survey instrument and has been used in a variety of countries. Summary data are available for selected countries though not by economic status.

Policy dialogue specific to nutrition will include review and assessment of a country's National Plan of Action for Nutrition, and commitments to relevant global conventions. Where Nutrition Plans of Action have been prepared and adopted with broad, cross-

sectoral involvement, it can form the basis for discussions of nutrition within the PRSP and CAS processes. Policy initiatives to support and strengthen optimal breastfeeding practices in a country include enforcement of the International Code of Marketing of Breastmilk Substitutes and support for the Baby Friendly Hospital Initiative. The country's regulatory framework regarding food additives and food safety are key to implementing effective fortification strategies. In particular, creating and enforcing legislation for universal iodization of salt is critical for successful eradication of iodine deficiency disorders.

### 3.5 Resources and useful tools

**Useful guidelines** and documents: Improving family and community practices, a component of the IMCI strategy, IMCI Planning guide, IMCI costing tool, List of Facility and Household indicators, A critical link: interventions for physical growth and psychological development (available from Flavia Bustreo, HNP World Bank or Bernadette Daelmans, Child and Adolescent Health, WHO).

World Bank Nutrition Toolkit available from the World Bank website: [www.worldbank.org/hnp](http://www.worldbank.org/hnp), or order by e-mail from [nutrition@worldbank.org](mailto:nutrition@worldbank.org) (US \$40 plus shipping costs).

Stolzfus RJ and Dreyfuss M. Guidelines for the use of iron supplements to prevent and treat iron deficiency anemia. INACG/WHO/UNICEF (1998).

WHO/BASICS/UNICEF. Nutrition Essentials: A guide for health managers (1999).

WHO/UNICEF/IVACG Task Force. Vitamin A supplements: A guide to their use in the treatment and prevention of vitamin A deficiency and xerophthalmia. Second Edition, Geneva: WHO, Nutrition Division (1997).

WHO/UNICEF/ICDIDD. Recommended iodine levels in salt and guidelines for monitoring their adequacy and effectiveness. (WHO/NUT/96.13)

**Useful websites:** Public Health Web site, WHO CAH home page: <<http://cdrwww.who.ch>>

**The Linkages Project** (for information on infant and young child feeding) [www.linkagesproject.org](http://www.linkagesproject.org)

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**Useful contacts** outside the Bank: WHO Department of Child and Adolescent Health, UNICEF Department of Health and Nutrition, The BASICS project.



**Poverty Reduction Strategy HNP Core Indicators**  
**Life cycle segment: CHILDHOOD**  
**Draft**

**Part 1: Topical Summary of Indicators**

**Note: All indicators will be presented and analyzed by income status.**

Development objectives; HNP outcomes	Intermediate determinants Core HNP indicators	Outputs		Inputs
		Health services	Health sector management	
<p>Under Mortality rate</p> <p>Prevalence of malnutrition (underweight prevalence<sup>1</sup>)</p>	<p><b>Nutrition:</b> Exclusive breastfeeding rate OR Timely complementary feeding rate</p> <p><b>Immunization:</b> Measles immunization coverage</p> <p><b>Care:</b> Home management of illness Malaria treatment rate</p> <p><b>Malaria prevention:</b> Use of insecticide-treated nets by children under 5 (in malaria risk areas)</p> <p><b>Water and sanitation:</b> Access to safe drinking water Access to sanitary means of excreta disposal</p>	<p><b>Careseeking:</b> Appropriate careseeking for fever/malaria, fast or difficult breathing/pneumonia, or diarrhoea</p> <p>Health services readiness: 1<sup>st</sup>-level facilities ready to provide integrated management of childhood illness (IMCI)</p> <p><b>Access:</b> Access to correct case management (IMCI)</p>	<ul style="list-style-type: none"> <li>▪</li> <li>▪</li> <li>▪ District commitment to health services</li> </ul>	<p><b>Health system support:</b> Policy guidelines and decision support Treatment guidelines and protocols Equipment and supplies Essential drugs</p> <p><b>Human resource development:</b></p> <ul style="list-style-type: none"> <li>▪ Skills-based training</li> <li>▪ Monitoring and follow-up to maintain performance</li> </ul> <p><b>Targeting poor communities:</b></p> <ul style="list-style-type: none"> <li>▪ Community-based IEC and behavior-change interventions</li> <li>▪ Health promotion</li> </ul>

## Part 2: Operational definitions and technical feasibility of proposed indicators

**Note: All indicators will be presented and analyzed by income status.**

Indicator	Operational Definition	Sources of information	Comments/feasibility	Field-tested/being used by <sup>α</sup>
<b>Development objectives; HNP outcomes</b>				
Under-five mortality rate	Proportion of children dying between birth and exactly five years of age, per 1,000 live births.	Vital registration; demographic surveillance; population-based surveys		MICS; DHS; IMCI; MCE; (RBM); CRC
Prevalence of malnutrition (underweight prevalence <sup>1</sup> )	Proportion of under-fives who fall below minus 2 and below minus 3 standard deviations from median weight-for-age of the national reference population.	Demographic surveillance; population-based surveys	Moderate and severe levels should be reported separately.	MICS; DHS; IMCI; MCE; CRC
<b>Intermediate determinants; Core HNP indicators</b>				
<b>Nutrition</b>				
Exclusive breastfeeding rate <b>OR</b>	Proportion of infants under 4 months (120 days) who are exclusively breastfed (no prelacteal feeds, no other foods, no water or other liquids)	Population-based surveys		MICS; DHS; IMCI; MCE; CRC
Timely complementary feeding rate	Proportion of infants aged 6-9 months who are receiving breastmilk and complementary food.	Population-based surveys		MICS; DHS; IMCI; MCE; CRC
Measles immunization coverage	Proportion of surviving infants who have received a dose of measles vaccine by their first birthday.	Population-based surveys		MICS; DHS; IMCI; MCE; CRC

<sup>α</sup> Acronyms used here are:

MICS: Multiple Indicator Cluster Survey, supported by UNICEF and carried out by national governments.

DHS: Demographic and Health Surveys, supported by USAID and implemented by MACRO international.

IMCI: Priority Indicator for the Integrated Management of Childhood Illness

MCE: Multi-Country Evaluation of the Integrated Management of Childhood Illness, under way in Bangladesh, Peru, Tanzania and Uganda.

RBM: Roll Back Malaria: Indicators as at 15 January, 2000.

CRC: Convention on the Rights of the Child: Proposed core indicators for monitoring child health and welfare.

Indicator	Operational Definition	Sources of information	Comments/ feasibility	Field-tested/ being used by
<b>Care</b>				
Home management of illness	Proportion of children aged 0-59 months who were sick in the last two weeks for whom the caretaker offered increased fluids and the same amount or more food.	Population-based surveys	Feasible, but validity of reports may need to be confirmed.	MICS; DHS (diarrhoea only); IMCI; MCE
Malaria treatment	Proportion of children aged 0-59 months who were ill with fever in the last two weeks and received appropriate antimalarial treatment (in malaria risk areas).	Population-based surveys		MICS; DHS; IMCI; MCE; RBM
<b>Malaria prevention</b>				
Use of insecticide-treated bednets	Proportion of children aged 0-59 months who slept under an insecticide-treated net the previous night (in malaria risk areas).	Population-based surveys	Need to determine validity of reports versus inspection.	MICS; DHS; IMCI; MCE; RBM
<b>Water and sanitation</b>				
Access to safe drinking water	Proportion of population who use any of the following types of water supply for drinking: piped water; public tap, borehole/pump; protected well; protected spring; rainwater.	Population-based surveys		MICS; DHS; CRC
Access to sanitary means of excreta disposal	Proportion of population who have, within their dwelling or compound: toilet connected to sewage system; any other flush toilet (private or public); improved pit latrine; traditional pit latrine.	Population-based surveys		MICS; DHS; CRC

Indicator	Operational Definition	Sources of information	Comments/ Feasibility	Field-tested/ being used by:
<b>Outputs; Health services indicators</b> <i>Careseeking</i>				
Appropriate careseeking for fever/malaria, fast or difficult breathing/pneumonia, or diarrhoea	Proportion of children under five with fever/malaria, fast or difficult breathing/pneumonia, or diarrhoea who seek care from an appropriate provider.	Population-based surveys	For comparability, will initially need to be reported separately by type of illness.	<i>For fever:</i> MICS; DHS; IMCI; MCE; RBM <i>For ARI:</i> MICS; DHS; MCE <i>For diarrhoea:</i> MICS; DHS; MCE
<b>Health services readiness</b>				
First-level facilities able to provide IMCI	Proportion of 1 <sup>st</sup> -level facilities with 60% of staff who manage children trained in the integrated management of childhood illness, and with essential drugs and supplies available.	Health facility visits	Availability of trained staff and needed drugs & supplies does not guarantee quality of care.	New indicator, but combines two IMCI indicators, and can be calculated using MCE data.
<b>Access</b>				
Access to correct case management (IMCI)	Proportion of children under 5 who have access to a health facility able to provide integrated management of childhood illness (see previous indicator).	District maps; population-based surveys or administrative estimates of access	Access may be defined as geographic proximity or other locally-determined definition.	MCE; CRC
<b>Health sector management</b>				
District commitment to health services	Percent of government recurrent health expenditure within the district health system spent on providing services.	National health accounts (WHO/EIP); Public Health Expenditure Review (World Bank); District health costing surveys	Feasible where National Health Accounts or Public Expenditure Review are done. Elsewhere, district health costing surveys may be required; methods for such surveys are available.	RBM

### **Technical Footnote:**

Selecting an indicator of malnutrition. Low height-for-age and low weight-for-height are the two preferred anthropometric indicators because they discriminate between different biological processes. This is not the case for the indicator low weight-for-age, because a child's weight may be low due to small stature and/or because of recent weight loss. Low weight-for-age is therefore a composite indicator that reflects both stunting (small body size) and wasting (weight loss). Children identified on the basis of weight-for-age are thus representing a mixed group in terms of their nutritional status. For the purpose of monitoring populations over time, height-for-age portrays performance in terms of linear growth, and essentially measures long-term growth faltering. It is also linked to the general standard of living and whether a population is able to meet its basic needs such as food, housing, and health care. Low height-for-age, or stunting, is now measured in all major surveys of child health in developing countries. In some countries, community monitoring includes this indicator. Project managers should strongly consider using this indicator in addition to low weight-for-age. (Prepared by Dr M de Onis, WHO)

## **3.6 Immunization; Vaccine Preventable Diseases**

### *3.6.1 Risks and intervention*

Nearly 2 million children die each year from the six vaccine-preventable diseases (measles, polio, whooping cough, tetanus, diphtheria, and tuberculosis) traditionally included in the Expanded Program on Immunization (EPI). Immunization has achieved impressive gains during the past two decades, including the prevention of over 3 million child deaths annually with current levels of vaccination coverage. Another 1.3 million deaths could be averted through effective vaccination with relatively newer vaccines against hepatitis B and Haemophilus influenzae (Hib). Globally, one in four children under one year of age (the target group for vaccination) are currently missed by immunization services; and in Africa, only 50% of children under one received a measles vaccination in 1998.

### *3.6.2 Immunization policy and strategy issues*

The major policy and strategy issues are those related to the private sector, delivery mechanisms, regulation, norms and guidelines and capacity building, disease specific, integrated approaches to lifecycle risks.

While vaccines clearly are essential to vaccination, many more inputs are needed to deliver them effectively and safely. The cost of fully immunizing a child is about US\$15, of which about US\$1.00 covers the cost of vaccines and the other US\$14 is needed to cover the costs of delivering the vaccines. Financing of EPI requires other investments besides vaccines, i.e., cold chain equipment, spare parts, repair and maintenance (possibly outsourced), fuel for refrigerators and sterilizers, as well as trained, paid staff and functional health facilities. Some hidden costs have not yet been estimated accurately, e.g., the cost of destroying contaminated needles and syringes so as to avoid risk to the community near a health facility.

The effect of health sector reform on the organization and delivery of immunization services has been the subject of several studies in Africa, Latin American, and Central Asian. Some key findings include that certain functions, such as the setting of policies,

norms and standards, the procurement of vaccines and equipment, and the design of disease surveillance forms, should not be decentralized. As immunization entails the control of vaccine-preventable diseases that do not respect district borders, it is especially important that the national level continues to play a role in the analysis and application of surveillance (and burden of disease) data. It was also recommended that the design and implementation of health sector reform actively engage immunization technical staff to ensure that those unique features essential to immunization quality and effectiveness are encompassed in the reforms. It was suggested, as well, that field reviews of the impact of HSR would benefit by including an analysis of the impact of HSR on EPI specifically, as the latter represents a fundamental health service that is directed to 100% of all newborns in every country.

### *3.6.3 Other external factors*

The landscape for EPI is changing due, in part, to external factors that are directly relevant to immunization. The infusion of substantial private funds from the Bill and Melinda Gates Foundation to help speed the introduction of new and underutilized vaccines worldwide and reduce vaccine gap between rich and poor children has led to renewed interest in immunization. A notable development has been the creation of the Global Alliance on Vaccines and Immunization (GAVI), comprised of major donors in health, including the World Bank, WHO, UNICEF, the Gates Children's Vaccine Program, the vaccine industry, bilateral donors, national governments, and others.

While the GAVI members share common goals, they can make complementary contributions, depending on their comparative advantage. New funds available through the Global Fund for Children's Vaccines (GFCV) may support the introduction of new vaccines; however, it will be critical that health system infrastructure continues to be strengthened (both with GFCV support and with other funding) to the point where all children can benefit from these vaccines. A strong health system is vital not only for currently available vaccines directly supported by GFCV (including hepatitis B, Hib, yellow fever) but also for vaccines against malaria, HIV, and tuberculosis, whose development is being hastened by additional funding from the Gates Foundation and other sources.

### **3.6.4 List of useful tools**

Websites: GAVI: **[www.vaccinealliance.org](http://www.vaccinealliance.org)**  
 WHO: **[www.who.int/vaccines](http://www.who.int/vaccines)**  
 CVP: **[www.childrensvaccine.org](http://www.childrensvaccine.org)**  
 SIGN: **[www.injectionsafety.org](http://www.injectionsafety.org)**

#### References:

1. Cutts, F.T., Advances and Challenges for the Expanded Programme on Immunization, *British Medical Bulletin*, 54(2) 445-461, 1998.
2. Cutts, F. T., Vaccination in the 21 century-new funds, new strategies?, *Tropical Medicine and International Health* 5(3):157-159, March 2000.
3. Godal, T., Immunization against poverty, *Tropical Medicine and International Health*, 5(3):160-166, March 2000.

4. Website for WHO/Vaccines and Biological document centre:  
<<[www.who.int/gpv-documents](http://www.who.int/gpv-documents)>> This website contains a broad range of reports as well as tools on such topics as training, assessment, evaluation, vaccine procurement, cold chain and transport management and injection safety.
5. Website for Global Alliance for Vaccines and Immunization (GAVI):  
<<[www.vaccinealliance.org](http://www.vaccinealliance.org)>> This website provides current information on estimates of disease burden from vaccine preventable diseases and information on the tools and approaches of GAVI.
6. Website for Bill and Melinda Gates Foundation Childrens' Vaccine Program (CVP):  
<<[www.childrensvaccine.org](http://www.childrensvaccine.org)>> In addition to providing descriptions of the activities of CVP, this website posts state of the art papers on new vaccines and program strategies to support the delivery and utilization of immunization services.

## 4 The School Age Period (from 6 years)

### 4.1 FRESH

#### FRESH

Focusing Resources on Effective School Health: a **FRESH** start to Improving the Health and Education of the School–Age Child.

Ensuring that children are healthy and able to learn is an essential component of an effective education system. Good health and nutrition are not only essential inputs but also important outputs of basic education of good quality. As a result of universal basic education strategies, some of the most disadvantaged children – the girls, the rural poor, children with disabilities – are for the first time having access to school. But their ability to attend school and to learn whilst there is compromised by poor health. These are the children who will benefit most from health interventions, since they are likely to show the greatest improvements in attendance and learning achievement.

The **FRESH Start** approach is an interagency initiative (WHO, UNICEF, UNESCO and the World bank) that has identified a core group of simple and familiar interventions, that when supported by effective intersectoral and community partnerships, are feasible to implement even in the poorest schools, and in hard-to-reach rural areas as well accessible urban areas. In brief these interventions are:

- (i) *Health-related school policies in schools* that, for example, do not exclude pregnant girls, that encourage healthy tobacco-free lifestyles, and that help maintain the education system in the face of HIV/AIDS.
- (ii) *Provision of safe water and sanitation* to provide a healthy learning environment that reinforces hygienic behaviors and provides privacy to promote participation in education of adolescent girls.
- (iii) *Skills-based approach to health, hygiene, and nutrition education* that focuses upon the development of knowledge, attitudes, values, and life skills needed to establish lifelong healthy practices and to reduce the vulnerability of youth and teachers to HIV/AIDS.

(iv) *School-based health and nutrition services* that are simple, safe and familiar, and address problems that are prevalent and recognized as important within the community, including the provision of counseling to cope with the HIV/AIDS epidemic.

Supported by: a) intersectoral partnerships, especially between health and education  
b) partnerships with the community, especially PTAs  
c) monitoring and evaluation.

Much more could be done, but if schools implement these four interventions then there would be a significant immediate benefit, and a basis for future expansion.

Contact at the World Bank: Donald Bundy, HDNED

Key References:

Partnership for Child Development: <http://www.ceid.ox.ac.uk/schoolhealth/>



## 5 Communicable diseases; all age groups

The major risks, interventions and outcomes for the major communicable diseases of adults and other age groups are discussed in this section. Below is a summary table of the major categories of communicable diseases, the key strategies or programs and a set of core monitoring and evaluation indicators:

**Table. Monitoring and Evaluation of Communicable Diseases of the poor; at country level**

These indicators represent a core set that will require adaptation to country epidemiological conditions, local priorities and health system needs

<b>Childhood Infectious Diseases (Diarrhoea, Acute Respiratory Infections, Measles, and Malaria)</b>	<u>Measuring outcome/Evaluating Impact:</u> <ul style="list-style-type: none"> <li>• Under five and infant mortality reduction</li> </ul> <u>Monitoring implementation of Integrated Management of Childhood Illness:</u> <ul style="list-style-type: none"> <li>• % of children under five sleeping under insecticide-treated nets</li> <li>• % of children under five with access to correct case management (IMCI)</li> <li>• % of children with illness correctly managed at home</li> <li>• % of infants exclusively breastfed to 6 months of age</li> </ul>
<b>Vaccine preventable diseases in childhood</b>	<u>Measuring outcome/Evaluating Impact:</u> <ul style="list-style-type: none"> <li>• Reduction in vaccine preventable deaths</li> </ul> <u>Monitoring implementation of Expanded Program of Immunization - plus:</u> <ul style="list-style-type: none"> <li>• % of children under 12 months immunized for measles</li> <li>• % of children under 12 months fully immunized for Diphtheria, Pertussis and Tetanus</li> </ul>
<b>Malaria (in malaria endemic countries)</b>	<u>Measuring outcome/Evaluating Impact:</u> <ul style="list-style-type: none"> <li>• Reduction in Malaria Death Rate (in under fives &amp; other age groups)</li> </ul> <u>Monitoring implementation of Roll Back Malaria strategy:</u> <ul style="list-style-type: none"> <li>• % of high risk persons with a malaria attack getting correct Rx in 24 hrs</li> <li>• % of pregnant women on intermittent antimalaria treatment</li> <li>• % of facilities with 1<sup>st</sup> and 2<sup>nd</sup> line antimalarials available</li> </ul>
<b>Tuberculosis</b>	<u>Measuring outcome/Evaluating Impact:</u> <ul style="list-style-type: none"> <li>• TB incidence rate: Number of new tuberculosis cases per 100,000 population</li> </ul> <u>Monitoring implementation of TB control:</u> <ul style="list-style-type: none"> <li>• % of reported TB cases detected under DOTS</li> <li>• % of detected TB cases cured</li> </ul>
<b>HIV/AIDS</b>	<u>Measuring outcome/Evaluating Impact:</u> <ul style="list-style-type: none"> <li>• HIV seroprevalence among adults aged 15 – 24 years</li> </ul> <u>Monitoring implementation of National AIDS program:</u> <ul style="list-style-type: none"> <li>• % with access to condoms</li> <li>• % STD cases correctly treated</li> <li>• % safe, donated blood</li> <li>• % with access to drugs for HIV/AIDS opportunistic infections</li> </ul>

## 5.1 HIV/AIDS

**5.1.1 The main risks for HIV/AIDS: *unsafe sex, STIs, mother-to-child transmission, early sexual debut, unsafe blood, unsterilized needles and instruments. The main risks of HIV/AIDS: HIV transmission to partners, infants and health care providers, immunodeficiency, prolonged and repeated illness, secondary AIDS-opportunistic infections (especially TB), death.***

The risk for HIV begins in the *perinatal period*. In developing countries, the risk of a baby acquiring the virus from an infected mother ranges from 25% to 35% if no preventive measures are taken. Mother-to-child transmission (MTCT) occurs in late pregnancy, intrapartum, and through breastfeeding. Worldwide, nearly one in ten new HIV infections occurs through MTCT.

The primary mode of HIV transmission is through unprotected heterosexual intercourse among *adults of reproductive age*. *Unsafe sex*—penetrative intercourse without a condom—multiplies the chance of infection by several thousand times. A series of biological and behavioral factors that are common in the developing world also increase the likelihood of transmission. *Early sexual debut*, especially for women, puts people at enhanced risk for HIV infection. Younger women and girls have reproductive tracts more susceptible to STIs, and generally have less power to negotiate safe sex with their partners. Half of all people who acquire HIV are infected by the age of 24. A delay in sexual debut of even two years has been found to have a significant impact on lowering transmission rates. *Sexually transmitted infections* in either partner increase the chances of HIV transmission by several times. Since women with STIs are often asymptomatic, they are at enhanced risk. Because HIV also facilitates transmission of other STDs, an environment of widespread untreated STDs can easily set a vicious circle of infection in motion.

*Unsafe blood* transmits HIV infection directly. This occurs when blood for transfusions is not screened, when *medical instruments* are not sterilized, when *intravenous needles* are shared, and when *razor blades* and other instruments employed in cultural practices are reused.

As *immunodeficiency* progresses and a person develops AIDS, the primary health outcome is *repeated and protracted illness*, culminating in virtually all cases in *death*. It is estimated that in low-income countries, a typical adult with AIDS will suffer nine episodes of serious illness from opportunistic infections. Some of these are highly infectious and lead to multiple secondary infections, most notably *tuberculosis* (TB). Health care professionals and home care providers are at particular risk because of their frequent exposure. The cumulative effect of these illnesses is nearly without precedent. In the worst-hit countries, AIDS has increased TB rates by 500 percent, doubled child and adult mortality rates, and reduced life expectancy at birth by more than 15 years.

Before the onset of AIDS, the primary risk is *transmission of HIV* to uninfected persons. Because of the long asymptomatic period of HIV, those infected (and their partners) can remain unaware of their status for many years. The absence of voluntary counseling and testing in most communities impedes even those who would like to know from

finding out. This reduces the likelihood that partners will practice safe sex or that mothers will take preventive measures to protect their infants.

**5.1.2 Key HIV/AIDS interventions: *blood safety, surveillance, behavior-change communication, management of STIs, condoms (male and female), reproductive health services, voluntary counseling and testing, prevention of mother-to-child transmission, access to HIV-related drugs and supplies (especially for AIDS-opportunistic infections), comprehensive TB program, diagnosis and patient management, home-based palliative care, care for orphans and vulnerable children.***

In no country has the health sector alone managed to contain an HIV epidemic. Preventing HIV transmission requires a comprehensive program encompassing as many sectors as possible. The health sector does, however, play a pivotal role in such a program. The appropriate steps in a given country will depend on the status of the epidemic, the presence of social risk factors, and the resources available. An effective basic program should include, at a minimum, the following health interventions.

*Ensuring blood safety* for transfusions is one of the most effective and easy-to-implement interventions, although it requires a sustained commitment and good logistical management. A comprehensive program includes increasing the share of voluntary donors relative to paid donors, screening all blood for HIV and other infectious agents, and decreasing the number of unnecessary transfusions.

*Epidemiological and behavioral surveillance of HIV/AIDS and other STIs.* Sentinel surveillance programs are the most cost-effective way to monitor trends over time and ensure compatibility of data.

*Behavior-change communication* should use multiple media channels to reach those at highest risk of infection as well as the general public. The communication should help people identify and change risky behavior—not just raise awareness. Such communication can also be integrated into existing training, school and workplace programs at little marginal cost.

*Management of STIs* is important both because STIs facilitate HIV transmission and because diagnosing and treating STI patients offers an opportunity to counsel them about high-risk behavior and provide them condoms. A comprehensive program teaches people how to recognize STI symptoms, where to seek treatment, and how to reduce their risk of contracting HIV. The program provides timely and accurate diagnosis of STIs, appropriate treatment for patients and their partners, and condoms. With proper guidelines, the syndromic management of STIs can be very effective, but should be complemented by integrating STI treatment and counseling into reproductive health services.

*Condom supply and logistics.* The proper and consistent use of condoms is the single most effective and cost-effective means of preventing STI transmission in casual sex. The success of a condom program depends on keeping condoms affordable and accessible. This generally requires a combination of sources, including commercial provision (at market prices), social marketing (at subsidized prices), and government-sponsored programs (free of charge).

*Voluntary counseling and testing (VCT)* has been demonstrated to be highly effective in changing people's behavior. A sound program strengthens and expands VCT services, creates demand for the services, provides them on a sustained basis, and ensures that the privacy rights of clients are assiduously protected.

*Prevention of MTCT* is becoming a highly cost-effective intervention. Recent advances have produced an affordable and feasible drug regimen that reduces the risk of MTCT by 37 percent. For both practical and ethical reasons, this intervention needs to be supported by essential infrastructure to procure and administer the drugs, as well as counseling for mothers, and appropriate advice for breastfeeding alternatives and vitamin A treatment.

*Drugs* to control the common AIDS-opportunistic infections are inexpensive and essential to alleviate suffering and to help prevent collateral epidemics, especially of TB. Successfully treating a case of TB can add months or years to the life of a person with HIV/AIDS. All appropriate drugs need to appear on essential drug lists, and proper procurement and logistics systems are necessary to ensure sustained availability and affordability.

*Home-based care.* For many people, AIDS is a chronic illness requiring long-term care that is not affordable or available in hospital. Some families with healthy care providers can take care of infected family members at home, but need the essential skills, tools, and financial resources to do so. This calls for basic training and supplies such as gloves and disinfectants.

*Orphans and vulnerable children,* even if HIV-negative, typically have higher rates of malnutrition, morbidity and mortality. They are less likely to seek care and more likely to be missed by public health campaigns. Special measures are needed to make sure that these most vulnerable children have access to basic health and nutrition interventions.

**5.1.3 The major outcomes: *HIV seroprevalence, TB incidence, IMR, U5MR, adult mortality rate, condom accessibility and quality, stigma and discrimination, knowledge, VCT, MTCT, sexual behavior (adults and young people), blood safety, STI care and prevention.***

HIV seroprevalence among adults aged 15-49 is the standard measure established by UNAIDS. It is typically derived from serologic studies of women attending antenatal clinics at sentinel sites, adjusted as needed. Although there are numerous well-known methodological difficulties and broad margins of error associated with this approach, it is widely regarded as a reliable indicator of the trend and pace of the epidemic in a given setting. It is also the only feasible approach in most developing countries, where 95 percent of HIV infections occur.

Indicators for key areas of HIV prevention, AIDS care and STD control programs have recently been reformulated by MEASURE Evaluation, UNAIDS, and WHO in a report titled *National AIDS Programmes: A Guide to Monitoring and Evaluation*. These indicators differ somewhat from those originally published in 1994 by WHO/Global Program on AIDS because they reflect the diversity of the epidemic and include new at-risk groups, such as young people. Relevant indicators in a given country depend on the state of the epidemic

The core indicators at the household level for a generalized epidemic are:

- Condom accessibility and quality
- Stigma and Discrimination
- Knowledge
- Voluntary testing and counseling
- Mother to child transmission
- Sexual behavior, including high-risk sex and condom use
- Young people's sexual behavior
- Blood safety
- STD care and prevention

#### 5.1.4 Resources:

Contact person in the World Bank: Debrework Zewdie, Act Africa  
UNAIDS: Awa Marie-Coll Seck ([Collsecka@unaids.org](mailto:Collsecka@unaids.org))

#### Other Resources:

Merson MH et al. Effectiveness of HIV prevention interventions in developing countries. *AIDS*. 2000 Sep; 14 Suppl 2:S68-84

Available at <http://www.unaids.org>:

UNAIDS. *Report on the Global HIV/AIDS Epidemic, June 2000*

UNAIDS. *Epidemiological Fact Sheets by Country*

UNAIDS. *Best Practice Series*

Available at <http://www.worldbank.org/aids>:

World Bank. 1997. *Confronting AIDS: Public Priorities in a Global Epidemic*

World Bank. 1999. *Intensifying Action Against HIV/AIDS in Africa: Responding to a Development Crisis*

World Bank. 2000. *Costs of Scaling HIV Program Activities to a National Level in Sub-Saharan Africa: Methods and Estimate*

## 5.2 Malaria

Malaria causes over a million deaths and up to 500 million clinical cases each year. Forty percent of the world is at risk of malaria but the majority of the 3,000 deaths each day occur in Africa. Inadequate Health system, drug resistance, population movement, deteriorating environmental health conditions, climate change are contributing to the spread of malaria.<sup>29</sup> Malaria has economic impacts through labor efficiency and land use; direct costs through expenditures by households and the public health sector, and adversely affects school attendance, performance and cognitive ability.

In November, 1998, the Roll Back Malaria (RBM) Partnership was launched jointly by the World Bank, WHO, UNICEF, and UNDP in response to requests from African heads of state to increase support for malaria activities. November 1998. It consists of malaria-affected countries, multilateral and bilateral development agencies, non-governmental organizations, the research community, the private sector and the media.

<sup>29</sup> RBM Fact Sheet, No. 1, "Malaria - a global crisis", World Health Organization

### 5.2.1 The key risks for malaria at different stages of the lifecycle

Malaria affects all age groups. However, children and pregnant women are especially vulnerable to the disease. Each year, some 24 million African women become pregnant in malaria-endemic areas. In addition, children of older age groups are increasingly affected by malaria. According to African health authorities, cerebral malaria is being seen with increasing frequency in recent years in older children and even in young adults.<sup>30</sup>

In highly endemic areas, malaria morbidity and mortality are affected by seasonal variations - peaking at the end of rainy season or seasons. The main forms of severe malaria are: cerebral, hepatic, renal, pulmonary oedema, gastrointestinal, severe anemia and hemoglobinuria or blackwater fever. Acute severity and mortality, in the absence of other complication factors, occurs almost exclusively in *P. falciparum* infections, which can proceed very rapidly.<sup>31</sup> Therefore, early detection, referral and treatment of the disease is essential.

***Malaria and Pregnant Women:*** In endemic countries, women are four times likely to suffer malaria attacks, and subject to increased risk of maternal anemia, abortion, still birth, prematurity, intra-uterine growth retardation, and infants of low birth weights (a major contributor to infant mortality). Nearly 60 percent of miscarriages are due to malaria.<sup>32</sup> In the semi-immune population of highly endemic areas, falciparum malaria represents a serious risk in the first and second pregnancy and is considered a major cause of anemia, hypoglycemia and other complications. In areas of year-round transmission, severe anemia poses serious complications in pregnant women, particularly in primigravidae after the first trimester.<sup>33</sup> Training can be provided for anemia recognition, and dispensing of iron supplements at community level. However, the incorporation of anemia reducing strategies into malaria control activities is a relatively new strategy.<sup>34</sup>

***Malaria and children (under 5 years):*** Up to 700,000 children, many under five, will die from malaria each year. In Africa and Western Pacific, the risk of malaria severity and death is most serious for the non-immune group, especially for young children under 6 months of age, when they have lost the immunity transferred from their mothers.<sup>35</sup> With acute disease, a child may die within 24 hours of developing symptoms. While severe malaria anemia occurs at an early age, between 22 and 27 months, cerebral malaria occurs in children between 40 and 45 months old.<sup>36</sup> Children can suffer an average of 6 malaria bouts each year.<sup>37</sup>

<sup>30</sup> Phillips-Howard, P.A., "Epidemiological and control issues related to malaria in pregnancy", *Annals of Tropical Medicine & Parasitology*, Vol. 93, Supplement No. 1, S11-S17, 1999.

<sup>31</sup> *Ibid.*,

<sup>32</sup> RBM Fact Sheet, No. 1, "Malaria - a global crisis", World Health Organization, 1999.

<sup>33</sup> Phillips-Howard, P.A., "Epidemiological and control issues related to malaria in pregnancy", *Annals of Tropical Medicine & Parasitology*, Vol. 93, Supplement No. 1, S11-S17, 1999.

<sup>34</sup> Malaria Update: "PVO Roles in Global Malaria Initiatives", the Child Survival Collaborations and Resources Group, September 30, 1999.

<sup>35</sup> Phillips-Howard, P.A., "Epidemiological and control issues related to malaria in pregnancy", *Annals of Tropical Medicine & Parasitology*, Vol. 93, Supplement No. 1, S11-S17, 1999.

<sup>36</sup> *Ibid.*,

<sup>37</sup> Malaria Update: "PVO Roles in Global Malaria Initiatives", the Child Survival Collaborations and Resources Group, September 30, 1999.

***Malaria and School Children:*** In endemic areas, as much as 60 percent of school children's learning may be impaired.<sup>38</sup> Twenty to thirty percent of mortality observed in school age children in Africa is due to malaria; malaria also accounts for an estimated 50% of preventable/avoidable reasons for absenteeism. Special attention must be given to address girl's education due to the danger of malaria during first pregnancies.<sup>39</sup>

***Malaria and Working Age:*** Malaria severity in adults is seen in areas of low endemicity, where people may reach adult age without immunity. During epidemics, all age groups are affected including immigrants, travelers, laborers and agricultural workers (e.g., malaria-afflicted families are able to harvest only 40 percent of their crops, compared with healthy families).<sup>40</sup> Malaria affects the poor and has economic impacts by reducing household income and by loss of productivity (e.g., workers suffering from malaria can be incapacitated for 5 to 20 days).<sup>41</sup>

### 5.2.2 Malaria key interventions

A recent analysis by London School of Hygiene and Tropical Medicine, proved that malaria control tools and intervention strategies are cost-effective. One healthy year of life is gained for every \$1 to \$8 spent on effectively treating malaria cases, which makes the malaria treatment as cost-effective a public health investment as measles vaccinations.<sup>42</sup>

The main interventions for addressing malaria are timely care seeking, diagnosis and effective treatment, the use of prophylaxis during pregnancy, and the use of insecticide-treated bednets (ITNs) and/or materials. One of the global Roll Back Malaria partnership's strategies is to achieve a 30-fold increase the use of ITNs in Africa through IEC and increasing supply and demand for bednets to reduce death from malaria.

### 5.2.3 Policy and strategy issues

The six elements of Roll Back Malaria movement are based on:

1)*Evidence-based decisions:* using surveillance, appropriate responses and building community awareness for early detection of malaria outbreaks. New techniques are available to control vectors (reducing reliance on DDT) and to predict epidemic outbreaks (e.g. use of GIS mapping for malaria burden and access to health care, malaria surveillance and management of epidemics).

2)*Rapid Diagnosis and Treatment:* Prompt and effective treatment for those who are ill can reduce mortality by at least 50%. A simple package of fast acting drugs made widely available to parents can assist children. Mortality can be reduced further if treatment is available in home (e.g., dip-stick diagnosis, pre-packaged medicines, and artesunate suppositories). Drug resistance can also be delayed through combination therapy.

<sup>38</sup> Ibid.,

<sup>39</sup> World Bank Seminar Report, "What should Schools do about Malaria", November, 1999.

<sup>40</sup> Phillips-Howard, P.A., "Epidemiological and control issues related to malaria in pregnancy", *Annals of Tropical Medicine & Parasitology*, Vol. 93, Supplement No. 1, S11-S17, 1999.

<sup>41</sup> Ibid.,

<sup>42</sup> Economics of Malaria Press Release WHO/28, 25 April 2000.

3) *Multiple Prevention*: Better multi-pronged protection can be provided using insecticide-treated nets, environmental management to control mosquitoes and to improve health sector response to malaria especially for children and pregnant women.

Insecticide-Treated Nets: Malaria accounts for nearly one million deaths each year in Africa; an estimated 700,000 of these deaths are among children. Research has found that the wider availability and use of insecticide treated bednets would reduce malaria morbidity by 50 percent among children. At present, only 2% of African children are protected at night with a treated bednet.<sup>43</sup>

Environmental Management: can be supported through multi-sectoral efforts to mitigate the risk created by infrastructure and agricultural projects; controlling mosquito breeding sites (e.g. draining or covering standing water, clearing of brush around households); and promotion and use of ecologically safe insecticides (e.g. reduce reliance on DDT, use of pyrethroid insecticides such as Permethrin, Deltamethrin or Lambdacyhalothrin).

IMCI: Through RBM movement, malaria has been integrated in IMCI in more than 35 countries worldwide. Malaria can be addressed during the perinatal period through: promoting strategies that will lead to a massive increase in presumptive intermittent treatment; the use of insecticide-treated nets during pregnancy; and by forging links with reproductive and maternal child health programs. Synergies can be established with IMCI to include community outreach and encouragement of private sector in communities (e.g. drugs vendors, shopkeepers).

4) *Focused Research*: Focused research to develop new medicine, vaccines<sup>44</sup> and insecticides and to help epidemiological and operational activities.

Global Partnerships with Industry: The challenge of defining effective treatment protocols in the face of increasing drug resistance by malaria parasites, a multi-country challenge, has prompted the formulation of the New Medicines for Malaria Venture (MMV) which is financed by the public sector and philanthropic bodies, and through in-kind support from industry partners. MMV responds to the lack of incentives for industry to pursue development of new products for malaria. It operates as a virtual industrial R&D program which has as its goal the registration and commercialization of one new affordable and appropriate antimalarial drug every 5 years.

Partnerships with the Research Community: The *Multilateral Initiative on Malaria* (MIM) was formed in 1987 to “strengthen and sustain, through collaborative research and training, the capacity of malaria endemic countries to carry out the research required to develop and improve tools for malaria control.” MIM has supported collaborative projects in a wide range of basic and applied research, increased connectivity and communications for researchers in Africa, as well as a global conference joining the research and control communities.

5) *Coordinated Action*: to strengthen existing health services, policies and providing technical support in the form of situational assessments (i.e. community prevention and

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<sup>43</sup> Ibid.,

<sup>44</sup> 8 vaccines are currently being tested.



treatment practices) and structured technical support networks (e.g. malaria treatment in complex emergencies, improving monitoring and evaluation procedures).

6) *A Dynamic Global Movement*: involving a coalition of stakeholders (RBM core partners, bilateral agencies, NGOs and civil society, research and academic institutions, and the private sector).

#### 5.2.4 Major outcomes

Roll Back Malaria aims to reduce malaria-associated mortality by 50 percent by the year 2010 and by 75 percent by the year 2015.

Key indicator: Case Fatality Rates

Other indicators: Use of insecticide treated materials

Proportion of people who access effective treatment within 8 hours of symptoms

Proportion of pregnant women at risk who receive presumptive intermittent treatment

#### 5.2.5 Other external factors

The major external factors related to climate change and population movement.

#### 5.2.6 Useful tools

***Useful guidelines and documents:*** The Malaria Team maintains extensive files of journal articles covering various aspects of malaria prevention and control.

#### **RBM Documents:**

Proposed Strategy and Workplan for Roll Back Malaria Cabinet Project; Initial Period covered July 1998-December 2001

Roll Back Malaria Action at Country Level: The Inception Process

**Malaria Team Reports: available from Julie McLaughlin and from the World Bank intranet web site.**

Summary Reports from Consultative Missions to Kenya, Uganda, Tanzania, Ethiopia, Malawi and Mozambique

Aide Memoires for Consultative Missions to Kenya, Uganda and Tanzania, Ethiopia, Malawi and Mozambique

Technical Reports for Consultative Missions to Kenya, Uganda and Tanzania, Ethiopia, Malawi and Mozambique

“Workshop Report: Identifying Opportunities to address Malaria through Infrastructure Projects,” June 1999

Workshop binder of materials: Identifying Opportunities to address Malaria through Infrastructure Projects, June 1999

Reports from the Multilateral Initiative on Malaria (MIM) African Malaria Conference in Durban, South Africa, March 1999

Reports from the First and Second RBM Global Partnership Meetings (Geneva, December, 1998 and Harare, June 1999)

Guidance to Bank Staff on the use of insecticides in malaria activities, August 1999

Assessment Tool employed in Ethiopia to Review Malaria with a Sector Program  
 Bridging Environmental Health Gaps, Cross-Sectoral Literature Review and Analysis,  
 Jim Listorti, May 1996  
 Environmental Health Project Activity Report, "Malaria in Urban and Peri-Urban Areas in  
 Sub-Saharan Africa  
 Urban Malaria Assessment Guide, EHP  
 Barriers to Trade in Mosquito Nets and Insecticides in sub-Saharan Africa, BASICS  
 Project and PATH Canada, April 1998

**Other Related Materials:**

Etude pour l'Elaboration d'une Strategie de Promotion des Moustiquaires imprégnées au  
 Senegal, November 1998

**Useful websites:**

Roll Back Malaria Web site: [http://mosquito.who.int/cgi-bin/rbm/login\\_rbm.jsp](http://mosquito.who.int/cgi-bin/rbm/login_rbm.jsp)  
 World Bank Intranet Web site: <http://afr/afth4/RBM/Default.htm>

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## 5.3 Tuberculosis – adulthood and all age groups

### 5.3.1 The TB Risks

Tuberculosis (TB) is a risk to individuals through the lifecycle but is especially a threat in adulthood. TB is an infectious disease transmitted by the air-borne person-to-person spread of mycobacteria. One third of the world's population is infected by the bacteria that causes tuberculosis. In most persons, the bacteria remain dormant through life. In 10% of infected persons, the infection becomes active and causes disease. The proportion of those who fall ill is as much as thirty times greater in persons with HIV infection or other diseases, such as diabetes, or malnutrition, all of which reduce the immune's systems ability to fight off disease. Prolonged exposure to an infectious case, through shared living or working quarters, especially in closed crowded conditions, are generally viewed as essential for transmission of disease. Interventions to improve housing, nutrition and general health status are seen as long-term tools to reducing tuberculosis incidence, as seen in the pre-chemotherapy era in many industrialized countries. However, with antibiotics available and low-cost diagnostic tools, tuberculosis is curable and considered highly cost-effective in low-income nations. Finding and curing infectious cases is seen as the highest priority for TB control in these settings.

As seen in Russia, breakdown in social, economic and public health, can contribute to a rapid rise in TB incidence if strong primary-health care-based TB control programs are not in place. Due to poor treatment practices and uncontrolled access to drugs, multi-drug resistant disease is spreading (add ref).

In 1999 an estimated 2 million persons died due to tuberculosis, 98% in developing nations. The toll is rising in some regions, particularly Africa, and Eastern Europe due to economic crisis, the HIV/AIDS epidemic, increased travel, breakdown of public health systems or all of the above. With rising HIV/AIDS cases in other regions as well, the toll is likely to increase. 40% of cases occur in two countries: India and China due to their size and epidemiological situation, but 22 countries comprise 80% of the world's burden according to WHO (add ref). The majority of cases occur among persons 15-54 years of age. More than 50% of cases occur among men, but TB also represents one of the major threats to women's health and development, killing more than 750,000 girls and women a year. A relatively small proportion of cases occur among children under 15 years.

Tuberculosis is especially prevalent among poor populations due to poor housing and work conditions, nutrition and access to health services noted above (ref Reider and Ahlburg).

### **5.3.2 Key TB Interventions**

The vaccine available to prevent tuberculosis (BCG) is only effective in preventing severe childhood forms of disease, and its efficacy wanes rapidly. It is not recommended for use among adults and it does not prevent vaccinated children from infectious forms of disease as they grow into adulthood. Therefore it is not a tool in preventing TB transmission.

WHO recommends a public health strategy for TB control known as DOTS, Directly-observed Treatment, Short-course. It comprises the following elements:

- Case detection by sputum smear microscopy among symptomatic individuals
- Standardized treatment for 6 to 8 months for at least infectious cases, with directly-observed treatment by health workers or volunteers during at least two months;
- A regular, uninterrupted drug supply
- A standardized information system that allows case counting, assessment of treatment results and TB control services overall
- Political commitment to sustained TB control activities. (ref WHO)

The treatment approach quickly makes patients non-infectious, thereby breaking the cycle of transmission, and reducing mortality and morbidity, as well as reducing risks of emergence of drug-resistance.

Today only half of the estimated 8 million annual new TB cases are detected and reported, with some proportion of the remaining 50% treated in the private sector (add ref). Of those reported, about 25% are now treated in DOTS programs worldwide, with significant progress achieved in rolling-out the strategy in China and India, in both cases with World Bank project financing. The Bank is involved in over 20 other countries with effective DOTS programs (see HDNET/HNP/public health website for more information on projects in high-priority countries).

To rapidly ratchet down incidence, symptomatic individuals need to be identified as early as possible and treatment to cure is essential. Therefore, the role of families, communities, and the health system are all critical in serving the needs of those ill. Experience in community-based care is beginning to show promising results (ref Maher, as well as Thailand, Indonesia studies)

In industrialized nations, treatment of latent infection is also provided to those found to be infected via tuberculin tests. However, this is cumbersome and difficult to achieve and cannot be first priority when a great proportion of infectious cases still go undetected. However, in high HIV-burden countries, identification of HIV-infected persons, treatment for active or latent infection is seen to be essential to reverse the rise of TB. However, more experience is needed in piloting approaches to implement such a strategy in low-resource settings.

Tuberculosis control carries significant positive externalities and failure to control TB represents a global threat. Individual patients are unlikely to seek care earlier enough or remain in care long to reduce public risks enough without public intervention (service delivery, regulation, information etc.). Similarly, nations are unlikely to obtain sufficient surveillance information or pursue sufficient control measures without international partnerships.

### **5.3.3 Major outcomes**

The major outcomes are: *TB case detection rate and TB treatment success rate*. Information on these indicators is included in the World Development Indicators 2000 produced by the Bank or available on the WHO website or from HDNHE. These indicators provide an indication of health service quality as well as impact.

### **5.3.4 Policy and strategy issues**

The WHO-recommended DOTS strategy is cost-effective when provided via primary health services, and thereby in coordinated fashion with other essential public and clinical services that are provided via local health services, health workers and/or volunteers in the community. In addition, as with many other interventions throughout the lifecycle, a referral system is required for complicated cases (such as those with very severe disseminated disease or with disease that is non-responsive to available antibiotics). In addition, TB control breaks down and public health is imperiled especially when drug supplies are insufficient or irregular.

For these reasons, DOTS programs are likely to be ineffective if they are insufficiently financed or if they operate where health systems and human resources are stressed, unless alternative strategies are put in place locally to compensate for these weaknesses. Similarly, health systems that are not applying appropriate technical practices will fail to control TB (add references).

Further work is required in Bank-assisted projects and elsewhere to overcome impediments to expanded access and operation of essential services. (can add examples of high cure rates in China but need to incorporate hospitals and provincial financing for sustainability, example of Cambodia/Bangladesh where cure rates also

high but primary care services need to be expanded to increase access to early case detection.

Also add note regarding need to pursue more research on how to incorporate the private sector, especially in Asia (reference Pathania discussion paper for Bank as well as other references.) – or contracting with NGOs (examples in Bank-financed projects in Bangladesh and Haiti)

Lastly can reference HIV/AIDS challenge – need urgent work between TB and HIV/AIDS programs to ensure early HIV identification and treatment for TB in coordination with other opportunistic infections (little national level examples yet working (reference DeCock/Chaisson, Raviglione etc.)

### 5.3.5 Other external factors

Gender issues related to TB case finding and treatment (reference Diwan book)  
Special risks – such as prison conditions and human rights (Russia references)

### 5.3.6 Useful tools

Focal persons in HDNHE: Diana Weil, Richard Skolnik and Christy Hanson (AFRTH)

Contacts outside the Bank: WHO, IUATLD, KNCV, STOP TB, CDC

## 5.4 Tropical Diseases

There are a number of tropical diseases not mentioned above that may have limited global scope and/or mortality effects, but pose large burdens for populations in defined geographical regions or for susceptible persons within wide geographical zones. A few examples include: leprosy, onchocerciasis, leishmaniasis, Chagas disease, yellow fever and lymphatic filariasis. In some cases, major strides have been made in recent years to control many of these diseases via focused disease control, elimination, or eradication partnerships involving the public, private and voluntary sectors, as well as new tools such as highly efficacious drugs and rapid diagnostic tests. These examples include the advances made towards elimination of dracunculiasis (guinea worm) and onchocerciasis (river blindness), the mosquito vector responsible for Chagas disease in the Southern Cone of South America.

Success in these fields does not suggest that resources can now be shifted away from tropical disease prevention and control, given the still formidable challenge of extending local successes to all populations at risk, as well as the emergence of new diseases as well as reemergence of major killers discussed in previous sections.

Useful sources of information

**Contacts** (within the World Bank): Bruce Benton (Onchocerciasis), Bernhard Liese (Tropical diseases) and Philip Coyne

## 5.5 Communicable Disease Epidemics

### 5.5.1 Epidemics and poverty

Due to poor living and working conditions (access to safe water, food supplies, sanitation and structures), poor communities are likely to face a greater relative risk of epidemics of communicable disease. The negative externalities of epidemics whether they originate among poor or wealthier populations are great. Some epidemic diseases may cause greater mortality among some age groups (such as malaria), while others may touch all age groups. Some may spread within relatively well-defined populations (e.g., refugee camps, hospital patients or prisoners) with limited dissemination in the general population, while others can have much wider effects even if they begin among narrowly defined risk groups (such as for HIV/AIDS, urban occurrence of Yellow Fever and malaria, the worldwide reemergence of cholera during the 1990s and dengue epidemics in Central and South America). However, the devastating human and economic costs may be great under both conditions. For example, when cholera hit Peru in 1991, the imposition of trade barriers by potential importers was responsible for the loss of \$700 million in revenues. In addition, cholera caused the loss of an estimated \$70 million in tourist revenues. In one coastal city alone, an average of 200 people in a population of 350,000 fell ill each week while health care workers blocked the entrance to the hospital to protest low wages and poor working conditions. Disease dissemination and economic impacts are increasing with growing frequency and facility of international travel and labor migration (e.g., the rapid spread of bacterial meningitis outbreaks associated with the pilgrimage to Mecca in early 2000).

National threats are increased with growing internal migration by the poorest populations due to economic, social or political crisis. The breakdown of routine public health and disease control systems can be exhibited in dangerous disease outbreaks, often among the poorest and most vulnerable (e.g., myriad disease problems among refugees and displaced persons, emergence of drug-resistant tuberculosis in New York City in the early 1990s and Russia in the late 1990s, importation and spread of malaria in Armenia in the mid-1990s, diphtheria outbreaks in former Soviet Republics, 1990s). Even when the public health consequences of disease outbreaks can be relatively quickly contained, the economic repercussions may be more difficult to prevent, such as the enormous trade and tourism losses seen within the last decade in Peru associated with cholera, in India associated with plague, and with dengue in Central America and the Caribbean.

### 5.5.2 Core Public Health Functions: *Surveillance, laboratory networks, technical capacity*

Most low-income developing nations have weak disease surveillance systems<sup>45</sup>, laboratory networks and severely limited technical capacity for early detection and

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<sup>45</sup> Epidemiological surveillance is defined by the World Health Organization as, "The systematic collection, analysis, interpretation and dissemination of health data for the planning, implementation and evaluation of public health programmes. The application of these data to disease prevention and health promotion programmes completes a surveillance cycle in public health...An epidemiological surveillance system is the set of interconnected elements and activities which contribute to the achievement of surveillance objectives. A surveillance system is usually established as an integral part of a health care system in order to monitor priority health events." (WHO. Protocol for the Evaluation of Epidemiological Surveillance Systems, WHO/EMC/DIS/97.2, 1997.)

response to epidemics. These networks may be the weakest where outbreaks may have a greater likelihood to occur, such as in rural regions or in crowded poor urban settlements. In some cases, the etiology of illness may be relatively easy to detect even under poor conditions (such as for cholera, measles or malaria). In other cases, extensive environmental, clinical and laboratory analyses may be required (e.g., recently seen with the Ebola virus in D.R. Congo, leptospirosis in Nicaragua and Nipoh virus in East Asia). Syndromic approaches that encourage early reporting on symptoms associated with highly infectious diseases, with follow-up confirmation and validation tools are advancing interventions globally. In addition, growing use of internet and wireless communications greatly facilitates early reporting and response.

There is an increasing number of global networks for communicable disease epidemic alert and response, as well as coordinated action to link them. Support for linking local health services and systems with these networks should be considered in poverty reduction strategy discussions.

However, even where detection may be relatively straightforward, reduction of epidemic risks may be difficult, such as for dengue which requires long-term changes in household and workplace storage and refuse disposal practices, to reduce the reproduction of the mosquito vector. Integrated surveillance systems need to be urgently developed and/or strengthened, especially within poor regions and communities. Environmental interventions as well as capacity-building for detection, reporting and treatment for health service staff also need expansion. These can all be considered, in light of national public health risks, within planning for poverty reduction strategies.

Recent worldwide disease eradication and elimination programs, such as for polio, as well as strengthened immunization, maternal and child health, and tuberculosis programs in some countries, all have contributed to greater definition of minimal disease surveillance and program evaluation systems. However, the challenge in most low-income countries remains how to improve the integrated use of these systems at the district level to reduce the strain on local health workers, and ensure a focus on quality response to patient needs. The growing challenges of preventing and controlling malaria, HIV/AIDS and growing non-communicable disease threats, are reminders that surveillance systems need to incorporate information from non-health sectors as well as increasingly use population-based surveillance tools.

**Useful tools:**

WHO. WHO Recommended Surveillance Standards. WHO/EMC/DIS/97.1, 1997.

WHO. Communicable Disease Surveillance Kit. WHO/CDS/CSR/1999

Websites with links to these and other surveillance tools, assessment guidelines, weekly epidemiological reports, and studies on the efficacy and effectiveness of surveillance and disease control interventions.

<http://www.cdc.gov>

<http://www.who.int>

Focal points: HDNHE: Mariam Claeson, Diana Weil (WHO secondee), Daniel Miller (CDC secondee), Anabela Abreu (Surveillance)

**Useful Bank documents:**

Project Appraisal Document: Brazil Disease Surveillance and Control Project, 1998

## **6 Non Communicable Diseases; all ages (mainly in adulthood)**

### **6.1 Non Communicable Diseases and poverty**

The health and longevity of human populations have improved substantially. In the last 50 years of the 20th century, life expectancy from a global perspective increased from about 45 years to about 64 years representing greater progress than experienced in the previous 4000 years. The decline in mortality, accomplished largely as a result of income growth, improvements in medical technology, public health, and the spread of knowledge have been accompanied by steep falls in fertility. As a result, a demographic shift toward older age distributions in populations is occurring in many areas of the world. WHO estimates that while the world's population grows at an annual rate of 1.7%, the population over age 65 increases by 2.5% per year. Nearly 360 million of the worldwide total of 600 million people over 60 years of age live in developing countries. It is estimated that by 2025, nearly 75% of all elderly will be in developing countries.

As the population profile shifts to older age groups, countries experience an epidemiologic transition in which mortality from infectious diseases declines while noninfectious, chronic diseases become the main causes of ill health. For example, in Poland it has been observed that while traditional health indicators such as infant mortality continue to fall, there is a large increase in deaths from circulatory diseases and cancer. In Hungary, analyses of causes of death suggest persistence of "older, poverty-type diseases" co-existing with "newer, lifestyle" diseases.

In 1990, the World Bank estimated that 42.2% of Disability-Adjusted Life Years (DALYs) lost globally were due to non-communicable diseases (NCD) compared to 45.8% due to communicable diseases. The percent DALYs lost due to non-communicable diseases were equal to those lost due to communicable diseases in Latin America and the Caribbean, and greatly exceeded communicable diseases in China, in the formerly socialist economies of Europe and in established market economies.

In westernized societies there is a consistent and continuous gradient between the prevalence of some non-communicable diseases (e.g. heart disease and stroke) with socio-economic status such that lower income people have more disease, are less likely to be clinically investigated (e.g. heart disease) or offered key clinical interventions (e.g. surgery in heart disease) once it has developed. Such patients may be further disadvantaged by having to wait longer for interventions because of being given lower priority. In addition, other studies have demonstrated that in western countries, people with lower income or lower education have higher prevalence of risk factors (e.g. smoking) for chronic diseases.

The relationships between socio-economic status and non-communicable diseases in low- or middle-income countries have received little study. A small study in Trinidad and Tobago showed that low income was associated with higher morbidity from diabetes while in Nigeria illiteracy and poverty were thought to contribute to a milieu that is "hostile" to the optimal clinical management of chronic diseases such as diabetes.



Other than for tobacco consumption (See Section 8.3), there is little data about NCDs and their risk factors among poor people in developing countries. Until recent years, excess weight (a risk factor for several chronic diseases) has been a problem of “epidemic” proportions only in developed countries but is now spreading to the developing world. It is estimated that more than 30% of the population in Latin America, the Caribbean, the Middle East, and Northern Africa is overweight. Populations living on Pacific and Indian Ocean islands have the highest prevalence of obesity in the world. In Asia and Sub-Saharan Africa, the overall prevalence of overweight is still low but incidence is higher in urban areas. Excess weight seems to appear first among the affluent in developing countries and then among low-income groups including young children and teenagers.

**6.1.1 The main risks for NCDs: *tobacco use; poor nutrition, lack of fruits or vegetables in diet, or diet high in saturated fats; overweight/obesity; high blood pressure; high blood cholesterol; lack of access to health care; lack of screening for cancer of the cervix, breast, or colon/rectum; sedentary lifestyle and physical inactivity; alcohol or other substance abuse; and, genetic pre-dispositions. Main NCDs: cardiovascular disease, cancer, lung disease, diabetes, mental health and physical disabilities***

Chronic diseases are characterized as illnesses that are prolonged, do not resolve spontaneously, are rarely cured completely, and frequently have “latency” periods lasting years or decades. Typical health problems and causes of death in older populations include cardiovascular disease (heart disease and stroke), cancer, lung disease, and diabetes. Significant disability also results from mental impairments (e.g. depression, cognitive losses), diseases of the bones, muscles or joints (e.g. arthritis, osteoporosis), poor dentition/oral health, and vision changes.

The risk factors for illness, disability, and death from chronic diseases in middle and late adulthood are inextricably linked to behaviors, exposures, and health interventions in the individual’s earlier lifecycle stages. Much of the chronic disease burden is preventable. The actual underlying contributors to much of the chronic disease burden are a limited number of health related behaviors practiced by people every day for much of their lives.

Risk factors for the most common chronic diseases include: *tobacco use; poor nutrition, lack of fruits or vegetables in diet, or diet high in saturated fats; overweight/obesity; high blood pressure; high blood cholesterol; lack of access to health care; lack of screening for cancer of the cervix, breast, or colon/rectum; sedentary lifestyle and physical inactivity; alcohol or other substance abuse; and, genetic pre-dispositions.* Many of the risk factors are correlated or interact with each other e.g. sedentary lifestyle and poor nutrition can cause obesity while tobacco use, family history of disease, physical inactivity, and diabetes in combination dramatically increase the risk for heart disease. One behavior can also be a risk factor for multiple chronic diseases e.g. tobacco use is a risk factor for cardiovascular disease, cancer, and lung disease.

**6.1.2 Key interventions: *Health promotion through prevention of tobacco use, smoking cessation, good nutrition, prevention of overweight/obesity, detection and, treatment of high blood pressure, reduction of high blood cholesterol, access to and use of basic health and clinical preventive services, screening for cancers of the cervix, breast, and colon/rectum, physical activity, and prevention and treatment of substance abuse.***

*Prevention of tobacco consumption/smoking cessation.* A very strong risk factor for multiple chronic diseases that cause significant amounts of disease, disability, and death is tobacco smoking. Tobacco control through multi-faceted approaches to prevent smoking initiation and to promote smoking cessation is a key cornerstone of any intervention strategy to prevent and control non-communicable diseases.

Smoking and smokeless (chewing) tobacco increases significantly the risk of at least 20 diseases - lung cancer, heart attacks, strokes, and other diseases of the arteries or veins, chronic bronchitis, emphysema, and cancers of the bladder, kidney, larynx, mouth, pancreas and stomach. The length of time that someone has smoked has a much greater impact on risk of developing these diseases, than does the number of cigarettes smoked. Most smokers start before the age of twenty; someone who reaches age 20 without ever smoking has a low probability of ever starting. So prevention needs to focus on delaying initiation of smoking, and it is also important to encourage and help smokers to quit. Most of the tobacco-related deaths over the coming 50 years will be among people who are already smokers, so while prevention is very important to health outcomes of people who are young now, a major reduction in tobacco-related disease and death will require much greater success efforts and success in cessation.

Information on the health risks of tobacco use and the benefits of quitting is important, but the single most effective and cost-effective intervention is using tax increases to raise tobacco product prices. High prices are a strong disincentive to young people who are just experimenting or are not yet strongly addicted to nicotine, and a strong incentive to established smokers to quit. Nicotine's strongly addictive properties (heightened by the ammonia and other additives in cigarettes) can make quitting very difficult. Health care providers can increase quit rates by asking patients about smoking behavior, and advising smokers to quit. Most ex-smokers quit without help, but counseling, groups and family support, and nicotine replacement and other pharmacological cessation products can dramatically increase success rates among those who try to quit. Clear, large, specific labels on cigarette cartons, restrictions on smoking in public places, and comprehensive bans on advertising and promotion of tobacco products are all highly cost-effective interventions, with demonstrated effects in many countries.

*Good nutrition.* Good nutrition, including a diet that is low in fat and, in particular, saturated fats and that includes five or more servings of fruits and vegetables each day, plays a key role in maintaining good health. Improving the diet could extend productive life span and reduce the occurrence of heart disease, stroke, diabetes, osteoporosis, and some types of cancer.

*Prevention of overweight/obesity.* Obesity and overweight are linked to heart disease, high blood pressure, diabetes, and possibly cancer. Prevention is focused on individual interventions including good nutrition and physical activity. Some social environmental interventions can contribute to prevention of overweight/obesity such as collaboration between public health, transportation, education, and city planning organizations to increase availability of safe walkways, emphasis on physical activity/education in schools, development of appropriate school meal planning, etc.

*Detection and treatment of high blood pressure and of high blood cholesterol.* Detection and adequate treatment of high blood pressure and of high blood cholesterol in clinical

medical practice have been demonstrated to reduce the incidence of stroke and heart attacks.

*Physical activity.* Physical activity decreases the risk of early death in general and of heart disease, diabetes, colon cancer, high blood pressure, overweight/obesity, osteoporosis, muscle and joint disorders, and symptoms of anxiety and depression in particular. Among the benefits of regular physical activity are improved strength and endurance, healthy bones and muscles, and weight control. Physical activity need not be strenuous to be beneficial and still greater benefits can be achieved by increasing the amount of physical activity. Men and women of all ages benefit from moderate activity such as 30 minutes of brisk walking five or more times a week. Special attention is needed for some special population groups because sedentary lifestyle and physical inactivity increase with age and is more common among women

*Screening for cancers of the cervix, breast, and colon/rectum.* Detection of pre-invasive lesions of the cervix as well as of invasive cervical cancer using Pap smears, followed by quality treatment has resulted in a 70% reduction in mortality from cervical cancer in populations where Pap smears have been in widespread clinical use for women age 18-20 years and older. Early detection of breast cancer through population-based screening (e.g. mammography, breast exam by a trained medical practitioner) of women ages 50-69 years followed by quality treatment have been demonstrated to reduce mortality by 30-40% by detecting cancers at early stages of disease when it is more treatable with better survival. Similarly, early detection of cancer of the colon/rectum (e.g. stool test for blood, sigmoidoscopy) in men and women age 50 years or older followed by quality treatment can reduce mortality by 30% in populations. Special attention is needed for some special population groups because utilization of screening services tends decrease with age and is less among women, and those with lower income and less education.

### **6.1.3 Key strategies: *policy/regulatory approaches, public education, medical practitioner education, patient education, socio-environmental changes, community-based partnerships, prevention and health promotion in health care services/financing***

Success in the prevention and control of chronic diseases in middle and late adulthood requires comprehensive, integrated approaches.

Examples of *policy/regulatory approaches* include (but are not limited to): tobacco taxation, , restrictions on smoking in public and work places, and requirements that health insurance plans cover the costs of screening services for cervix, breast, and colorectal cancers.

Examples of *policy/regulatory approaches* include (but are not limited to): tobacco taxation, prohibition of tobacco sales to minor children, and requirements that health insurance plans cover the costs of screening services for cervix, breast, and colorectal cancers.

*Education and training of medical practitioners* about the burden of chronic diseases, the known risk factors for chronic diseases, and effective prevention and health promotion interventions that can be implemented in medical practice are essential. *Education* of the general public and targeted information (e.g. to special population groups) about the

burden of chronic diseases, the known risk factors for chronic diseases, and effective prevention and health promotion interventions are critical to improving outcomes in the population. Patient education (i.e. information for those individuals already known to have a chronic disease) about effective health promotion activities can decrease the severity of disease and prevent or slow progression of disease.

*Community-based approaches and partnerships* involving government, health authorities, consumers, charitable organizations, bilateral and multilateral donors, the media, and the private sector can support and facilitate the identification of and problem-solving related to social and environmental barriers or challenges to the prevention and control of chronic diseases. In addition, the incorporation of prevention and health promotion services in the structure, function, and financing of health care services contributes significantly to the availability and access to potential interventions to prevent and control chronic diseases.

*Ultimately, in order to reduce incidence, morbidity, disability, and mortality from chronic diseases in middle and late adulthood, many of the key interventions must also occur in other lifecycle stages particularly in childhood and adolescence.*

**6.1.4 Major Outcomes: rates of tobacco use, prevalence of behavioral risk factors, screening rates for selected cancers, disease-specific incidence and mortality rates, Body Mass Index (BMI), adult mortality rate, rates and costs of utilization of selected health care services, prevalence of disability that limits daily activities.**

Most chronic diseases have long natural histories before leading to death. Exclusive use of death rates for evaluating health outcomes in chronic diseases will limit the ability to adequately monitor or document progress. For example, in the 1960s, smoking rates in men began to decline in the United States but a decline in the incidence and mortality due to lung cancer did not begin until the early 1990s. Therefore, earlier, more proximal measures of relevant risk factors and health outcomes that precede death are needed to develop and monitor prevention and health promotion interventions.

*Prevalence of behavioral risk factors.* Self reported measures of behavioral risk factors such as levels of physical activity, diet, and alcohol consumption are usually derived from periodic or ongoing cross-sectional surveys. Given the strong causal relationship of tobacco consumption to multiple chronic diseases, monitoring tobacco consumption is of paramount importance. Standard definitions should be used to track adult and youth smoking prevalence and age of initiation. The Global Youth Tobacco Survey project is helping monitor youth prevalence and attitudes. A standardized Global Youth Tobacco Survey (GYTS) is being conducted in many countries, with help from CDC and WHO, gathering information for 13 and 15 year olds. CDC and WHO have also developed standardised definitions for surveys of adult smoking prevalence. Ideally, surveys should define current users, distinguishing between occasional and regular/daily use, and former smokers. Many surveys also ask smokers about past attempts and future intentions or desires to quit.

Similarly, estimates of the prevalence of risk factors such as overweight/obesity (measured by Body Mass Index calculated from height and weight), high blood pressure, high blood cholesterol, and lack of access to medical care can be derived from survey self-reports or, alternatively, from analysis and synthesis of medical claims data or health services utilization data.

*Screening rates for selected cancers.* Prevalence of use of early detection technologies (mammography, clinical breast exams, stool blood tests, sigmoidoscopy) can be derived from survey self-reports or, alternatively, from analysis and synthesis of medical claims data (e.g. diagnoses reporting groups from insurance plans) or health services utilization data (e.g. hospital discharge diagnoses).

*Costs and rates of utilization of selected health care services.* Costs and rates of utilization of selected health care services (e.g. prevention services, screening services, treatment services) can serve as barometers of disease burden, disease severity, and quality of medical care in a population. Rates of services utilization can be estimated from survey self-reports or, alternatively, from analysis and synthesis of medical claims data or health services administrative data.

*Adult mortality rate and disease-specific incidence and mortality rates.* A commonly reported health outcome indicator for middle and late adulthood is adult mortality. However, overall adult mortality rates are all encompassing and lack sufficient specificity to help evaluate or guide individual interventions. Disease-specific incidence rates are usually derived from disease registries (e.g. cancer) or from medical claims/administrative health data (e.g. cardiovascular disease, diabetes). Disease-specific mortality rates come from vital statistics. Including smoking status on death certificates and other existing health records can provide valuable information at very low additional cost. Indicators such as stage-at-diagnosis (cancer) and survival time after initial diagnosis can also provide more timely measures and predictors of longer term health outcomes i.e. the less advanced a disease is at the time of initial diagnosis affords the opportunity to treat early, improve survival time, slow the progression, or even cure the disease.

### **6.1.5 Policy Issues**

The policy and planning challenges due to the changes in age and disease profiles of populations globally are formidable. Such changes have implications for other sectors including social protection, financing, and gender. As the age structure of developing countries changes, demands on limited resources by middle and late adulthood populations will grow. By the year 2025, many developing countries will have age structures approaching that of the developed world today yet the resources and infrastructure needed to provide for the rapidly aging populations will not exist. In many countries, younger generations will lack the resources to offer any significant support to the older generation in a family context or through ongoing economic transfers at a societal level. Medical care for chronic diseases can be costly. Women and widows will be differentially affected since life expectancies of women exceed those of men.

Equally challenging is that the population-based interventions proven to be efficacious to reduce mortality from chronic diseases have been tested in western, high income countries. The effectiveness of health promotion and disease prevention approaches for chronic diseases have not been tested in developing countries. Such interventions/services (e.g. cancer screening and treatment) are likely to be prohibitively expensive for developing countries and for countries in epidemiologic transition. In addition, the costs of treating chronic diseases once identified are high e.g. in the US, accounting for 60% of the nation's medical care costs.

Poor individuals tend to delay seeking health care even in the presence of symptoms and frequently present for care when their illnesses are in more advanced stages—stages that are more difficult and more expensive to treat. There are medical ethics implications (particularly in poor populations) of paying for screening and finding a terminal disease (if untreated) while treatment services are unavailable or unaffordable.

Many countries are and will be hampered by undeveloped or inadequate information and data systems. Health surveillance data is an essential foundation to any health project planning, resources allocation processes, project implementation, program evaluation, and research. Health surveillance data can be used to identify and target efficacious and cost-effective interventions to the highest risk groups and populations and to assess the impact of the interventions. A lack of investment in health surveillance infrastructure will make project planning, implementation, and evaluation very difficult or even impossible.

While it is true that the incidence of chronic diseases increases with age, aging and progression from one lifecycle stage to the next should not be viewed as a disease in itself. Chronic diseases do not have to be an inevitable consequence of aging. Aging is a normal human development process involving biological, psychological, and sociological changes. However, the aging process is frequently described or characterized solely in a context of illness and disability. In many societies, aging can culminate in decreased productivity, decreased quality of life, loss of income with high risk for poverty, social isolation, marginalization, and social dependency. People who live healthfully and avoid the behaviors that increase their risk for chronic diseases can expect to have healthier, longer lives. Evolving perspectives on middle and late adulthood focus more on level of function as a health outcome and on identifying, testing, and evaluating methods and interventions that promote elder health, foster independence and autonomy, enhance older adult's societal roles, increase interpersonal support, and reduce social isolation.

#### **6.1.6 Useful Tools:**

Websites:

Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion: [www.cdc/nccdphp.gov](http://www.cdc/nccdphp.gov)

Surveillance Tool Kit - under development by Anabela Abreu

Resource Contacts at the World Bank: Daniel Miller, Isabella Danel, Joy de Beyer (tobacco).

## **6.2 Injuries**

**6.2.1 The main risks: *Unintentional – Road traffic injuries, poisoning, falls, fires, drowning, other unintentional injuries. Intentional – self-inflicted injuries, homicide and violence (interpersonal violence), war injuries***

Almost 16,000 people die from injuries every day, and for every person who dies, thousands more are injured, many with permanent sequelae of injuries.\*2 The World Development Report, 1993 identifies road traffic accidents among the leading ten causes of global burden of disease, and road traffic accidents and self inflicted injuries among the leading 15 causes of global mortality. \*1

It is estimated that 5.8 million people worldwide died from injuries in 1998 (97.9/100,000). Injuries are leading causes of deaths in all age groups measured in the WHO World Health Report 1999 database. Road traffic and self-inflicted injuries are the leading causes of injury-related deaths worldwide. Five of the top ten causes of death in the world for persons aged 15-44 years are the result of injuries. Road traffic injuries, interpersonal violence, self-inflicted injuries, war injuries, drowning and injuries resulting from exposure to fire are all among the leading causes of death for persons 15-44. The leading injury-related causes of death among youths is traffic injuries while among persons aged 45 years and older it is self-inflicted injuries. Falls also appear among the leading causes of death in the world, they are the leading cause of burden of disease for children aged 5-14.\*2

Worldwide, road traffic injuries are the leading injury-related causes of death and burden of disease in males. Self-inflicted injuries are the leading, injury-related cause of death among females. By region, road traffic injuries are the leading cause of injury-related deaths, however wars are the leading injury-related cause of death in Africa, and self-inflicted injuries are the leading injury-related cause of death in China. China and other low-and middle-income western Pacific Countries identify drownings among the 15 leading causes of death and burden of disease. India is the only country which classifies fire among the 15 leading causes of death.

### **6.2.2 Core Public health functions and key interventions: *Surveillance, Risk Factor Identification, Intervention and Evaluation, Implementation***

Like other health problems, injuries can often be prevented. A public health framework for injury control put forth by the World Health Organization provides a scientific approach that can be used to prevent or intervene to reduce the incidence of injury. The model offers four stages which recognize and can be used to effectively intervene to reduce rate of injury. These are: surveillance to identify and define the problem, 2) risk factor identification to identify the cause, 3) intervention and evaluation to develop an effective response, and 4) evaluation and implementation that are proven to be most effective. Intervention can be applied to target on an individual basis, as well as through developed methods for community-based application. These are traditional and scientifically-based public health methods that reduce injury incidence through a concerted application.\*2

### **6.2.3 Major Outcomes: *Mortality, morbidity, injury incidence rates***

Injuries have been shown to account for a significant health burden on all populations regardless of their age, sex, income or geographical region. Data from the World Health Report 1998, and other reports show the importance of injuries as a public health problem. However perhaps as a result of the traditional view of injuries as “accidents,” injuries has lacked relative recognition in the public health arena. Although some interventions exist, a set of interventions that is relevant and accessible and which can effectively lower the incidences of injury particularly among the poor and target populations which are most vulnerable, may still be ahead of us.

Sources: \*1 World Development Report, 1993, Investing in Health, World Development Indicators, The World Bank, 1993.

\*2 World Health Organization World Health Report, 1999 and World Health database.

\*3 Centers for Disease Control and Prevention, Injury Prevention and Control unit.

\*4 Graitcer, Philip, D.M.D., M.P.H., Emory University.

## 6.3 Tobacco

### 6.3.1 Tobacco and Poverty – the risk <sup>46</sup>

#### **Tobacco is a growing concern in low- and middle income countries**

Smoking is rising in most low and middle-income countries, unlike in most high-income countries, where better information and tobacco control policy efforts are helping reduce tobacco consumption per capita. As a result, the devastating health and economic consequences of tobacco use increasingly burden developing countries. Half of the 4 million tobacco-related deaths that will occur in 2000 will be in low and middle-income countries; this will rise to 70% of the 10 million deaths that will be caused by smoking by the year 2030.

Tobacco control efforts are not widespread in the developing world (although there are exceptions); and aggressive marketing and promotion by the tobacco industry, changing social norms and rising incomes (in some cases) are causing unprecedented rises in smoking prevalence, among men and women across the developing world.

*Low income, less educated people tend to smoke more, with serious consequences for health*

Within countries, lower-income, less educated people tend to smoke much more.<sup>47</sup> They have less access to information on the adverse health impact of tobacco use, and seem to respond less to such information. Half of all long-term smokers die as a result of tobacco use, and half of those deaths are in the age group 35-69, causing loss of many years of life. There is also a substantial disease burden from smoking, with smoking causing most cancers of the lung, mouth, throat, trachea and bronchia, chronic obstructive pulmonary disease, and a significant proportion of cerebrovascular disease. Smoking also causes low birth weight, birth asphyxia, respiratory infections, hypertensive diseases, ischemic heart disease, and other cancers.

*Smoking exacerbates poverty in several ways*

- The money spent on smoking has a high opportunity cost, and can be a surprisingly high percent of disposable income.<sup>48</sup>
- Poor families can be sorely affected by disease and death, and by the loss of income of a breadwinner who becomes sick or dies.
- The health risks affect not just those who smoke, but everyone living in the household.
- There are also issues of occupational safety for some tobacco workers (skin cancers and other diseases from handling raw tobacco).

<sup>46</sup> The best reference is World Bank, 1999, "Curbing the Epidemic: Governments and the Economics of Tobacco Control". Full text is available on-line at [www.worldbank.org/tobacco](http://www.worldbank.org/tobacco).

<sup>47</sup> For example, in Indonesia, 76% of men and 22% of women with no education smoke. Prevalence falls progressively with increasing education, but is high even among men with university degrees, 46% of whom smoke. (Indonesia Family Life Survey, 1993)

<sup>48</sup> LSMS data sets are being analyzed to compile data on this, results expected summer 2000.



- In some countries, employment in the tobacco industry is also associated with child labor, and very low income jobs (for example, workers who make bidis, or hand-rolled cigarettes in India).

### 6.3.2 Policies and actions

#### *Why should governments intervene?*

Many smokers do not know their risks, most begin smoking at very young ages, and most smokers regret ever starting. The externalities – harm imposed by second-hand smoke on others, especially unborn and young children, are a further justification for government intervention. There is substantial accumulated evidence on the efficacy and cost effectiveness of key measures to reduce demand. **Modest action could save millions of lives and avert much disease, including among the poor, without long-term harm to economies.**

#### *How to reduce demand for tobacco*

- The most effective, and most cost-effective measure is to **increase taxes** on cigarettes and other tobacco products: a 10% price rise decreases consumption by about 8% in low- and middle-income countries. Existing evidence from developed and developing countries shows that people with less income, and children and adolescents (who have limited incomes) are more responsive to price increases than people with higher incomes.<sup>49</sup> **Higher taxes will generate additional government revenue**, and in almost all countries, expenditure switching from tobacco to other goods will create new jobs in other sectors to offset jobs that may be lost in tobacco growing, production, marketing and distribution.
- Non-price measures, especially
  - **Restrictions on smoking** in public and work places
  - Better consumer **information**: research findings, counter-advertising
  - Comprehensive **bans on advertising and promotion**
  - Large, direct **warning labels** on cigarette boxes
- **Help for smokers who wish to quit**, including increased access to Nicotine Replacement (NRT) and other cessation therapies (although the costs of NRT are likely to be too high to consider public subsidies or provision in most countries, and probably unaffordable for poor people in most countries).

Most **measures to reduce supply** are ineffective (prohibition, youth access restrictions, crop substitution efforts and trade restrictions). Control of smuggling is the exception, and is the key supply-side measure to pursue.

#### *Obstacles and opportunities*

Efforts to reduce smoking face formidable obstacles: nicotine addiction; social pressures; aggressive cigarette marketing and promotion; and the vested interests of those who live and profit by cigarette sales. But there are many good success stories that could be replicated with political will and broad support. Many of these measures have very modest costs, and tax increases generate revenues for the public purse. So tobacco tax increases present a rare opportunity to achieve public health and fiscal

<sup>49</sup> For example, a survey in Poland in 1999 found that people with low incomes were much more likely to smoke less or switch to cheaper brands, quit or try to quit smoking in response to cigarette tax increases. Czart et al, 2000 (forthcoming).

goals with one stroke, and a unique opportunity and coincidence of interest for the finance and health ministries.

### **Concerns about the effect of tax increases on the poor.**

One concern is whether increases in tobacco taxes would have a disproportionate impact on the poor. Since the poor have lower incomes, even when their smoking prevalence and consumption is no higher, spending on tobacco and hence the tobacco tax incidence claims a higher share of their income than that of consumers with greater incomes. This is of course more strongly the case if the poor are more likely to smoke than the rich. This makes tobacco taxes -- like many consumption taxes -- regressive. But tobacco tax *increases* may not be regressive, depending on the extent to which poor people reduce their consumption in response. If -- as may be the case -- low income smokers cut back consumption by more than the price/tax increase, then increases in tobacco taxes will reduce their overall tax burden. And when one adds in the reduction in risk and consequent health gains that will result from lower use of tobacco, tobacco tax increases may be highly beneficial for the poor. Moreover, the distributional impact of a single tax should not be considered in isolation from that of the broader system of taxation and government spending. All or part of additional revenues from higher tobacco taxes could be used in a pro-poor way to achieve health and broader poverty-reduction goals.

### **Export Earnings and Employment Effects.**

The economic importance of tobacco is often overstated. In most countries, tobacco-related employment and export revenues are a very small percentage of the respective totals. Changes are likely to be gradual and relatively small in the next decades. There are currently more than one billion smokers in the world, and this number is expected to grow to about 1.6 billion by 2025. Demand reduction efforts are hard pressed to slow the growth in global cigarette consumption, let alone reduce it. So the global market in tobacco and cigarettes is not under immediate threat.

Moreover, tobacco-related jobs also depend on technology changes in the cigarette manufacturing industry, and on the tobacco content of cigarettes. These two factors may have as much -- or more -- potential to affect employment in the tobacco industry.

A fall in tobacco use in a country does not necessarily mean a fall in total employment. Money once spent on cigarettes will be spent instead on other goods and services, generating other jobs to replace those lost from the tobacco industry. Employment switching patterns and the relative import-intensity and labor-intensity of different sectors of the economy will determine the overall impact. Most countries would see no net loss of jobs, some would enjoy net gains, if tobacco consumption fell.

Countries whose economies are highly tobacco-dependent, or groups of workers within a country who are heavily dependent on tobacco for their livelihoods, may need help in coping with adjustments in the future, if efforts to reduce national or global tobacco use succeed well. Changes are likely to be gradual.

### *Expected benefits for poverty reduction of Tobacco Control Policies*

- Lower disease burden and lower mortality rates
- Less foregone income because of illness and death of working age smokers
- Potential reallocation of spending on cigarettes to items that can benefit former smokers and their families

- Higher government revenues – can be used in pro-poor ways
- More jobs (in most countries) – depending on expenditure switching patterns and tobacco/cigarette trade patterns.

### 6.3.3 References and Resources

- World Bank, 1999. *“Curbing the Epidemic: Governments and the Economics of Tobacco Control”* Development in Practice Series. (Available in 12 languages, English and French sold in the Bank’s Infoshop, or free on line, see website below.)
- Jha, P. and F. Chaloupka (eds) 2000. *Tobacco Control Policies in Developing Countries*, OUP for the World Bank - contains the detailed background papers which are summarized in *“Curbing ...”*
- Economics of Tobacco Control **website** ([www.worldbank.org/tobacco](http://www.worldbank.org/tobacco)) which also contains links to other related sites
- Country tobacco use/economics fact sheets exist for many countries (will in future be added to the website), additional country briefs can be compiled upon request: Ayda Yurekli, HDNHE health economist, x 33749, [ayurekli@worldbank.org](mailto:ayurekli@worldbank.org)
- Tobacco Coordinator: Joy de Beyer, HDNHE, x 31887, [jdebeyer@worldbank.org](mailto:jdebeyer@worldbank.org)
- Sector Board Member responsible for tobacco: Maureen Law, HNP Sector Manager, EASHD

## 6.4 Mental Health

Mental health is taken in the broad sense, to include mental well being as well as absence of mental disorders. This section will also discuss epilepsy which in the developing world is often managed in the same clinics and by the same workers as mental disorders. This section also includes alcohol and substance abuse.

### 6.4.1 Key Risks: *Post partum depression, neonatal, infant and childhood seizures, developmental delays due to malnutrition, chronic psychotic disorders with onset in early adulthood, organic and psychological consequences of chronic infections such as HIV/AIDS, psychological complications of complex emergencies, Violence Against Women*

Main risks include post partum depression which will affect functioning of the mother and her ability to care for and adequately stimulate the infant. There are reports of infanticide as well as suicide resulting from post partum depression. The incidence rate is found to be constant all around the world and cutting across all social classes. Neonatal tetanus, septicemia and meningitis often lead to seizures in neonates and infants. They may not be well managed resulting in the development of epilepsy. The prevalence of epilepsy has been found to be much higher in the developing world. Rates of epilepsy in any population reflect the health status of the given population. Malnutrition is a big problem in the developing world. In Uganda, 40% of children below the age of five years are malnourished. This malnutrition is often associated with cognitive impairments. Milder cases are reversible but the severe are not.

Most of the developing world has a pyramidal population distribution with over 50% of the population being below the age of 15 years. There is an occurrence of between 9-18

% of this population with childhood mental disorders. They are often not recognised and often lead to poor performance in school and behaviour disorders in adolescence. Chronic psychotic disorders frequently occur for the first time in early adulthood. They must be managed early and effectively if the disability is to be minimal. This is often not the case where knowledge is limited and access to services not available. HIV/AIDS is on the increase in the developing world, especially in Africa. Associated with AIDS is depression, anticipatory bereavement, AIDS Dementia Complex and other organic complications of AIDS such as cryptococcal meningitis.

Many parts of the developing world have different kinds of complex emergencies, from the inner city violence of South Africa to the conflicts in eastern Europe and 20 out of 26 Countries of the African region to the Drug wars of the Latin American Region. Risks include post traumatic stress disorder, alcoholism, increased sexual activity, teenage pregnancies, family breakdown and other psycho social consequences. 100% of a population that undergoes a traumatic event will have a form of a reaction. This is normal but must be well managed in order to reduce the long term negative consequences. 10% will develop a more severe form of reaction including depression, suicide attempts and completion, PTSD, alcoholism and drug abuse among others. Complex emergencies may also tip over those with borderline mental disorders into overt mental disorders such as depression and schizophrenia. Violence against women is another risk whose occurrence is increasing and the consequences include impact on family well being, on economic productivity and increased fertility. A World Bank Discussion paper found ranges from 20% (Colombia) to 60 % (Ecuador, Tanzania, Sri Lanka). The average figure is at about 40%.

**6.4.2 Core Public Health Strategies and Interventions: *Integrating mental health care into maternal and child health services, school health services, Integrating mental health into PHC, provision of psycho –social programmes to people affected by complex emergencies***

*Preventive/promotive care* is the backbone for interventions. Information, education and Communication for common mental and neurological disorders and their management. This is best integrated into other health education programmes, for example, during ante-natal visits, women can get information on the symptoms of depression and they are then advised to report to the attending mid wife should the symptoms occur after delivery. They can also be given information on recognition of problem symptoms in their babies and this can be repeated during the post partum visits and during immunisation visits. School health programmes are excellent avenues for providing screening for various disorders as well as primary interventions and education on prevention. A programme developed by UNICEF, called SHEP School Health Education Programme developed a curriculum for health education within the school system. This has been taken a step further to the Life Skills programmes and the Sara Communication Initiatives.

*Curative services* include the integration of mental health into the primary health care system. This involves review of health workers curricula so that mental health is a component, re training of health workers so they have the basic skills to manage common mental health problems and establishment of an effective referral system. Essential mental health drugs must also be integrated into the drug kits at all levels of the health care system. The very basic drugs are Chlorpromazine for psychotic

disorders, phenobarbitone for epilepsy, and Imipramine for depression. Mental health is also included in the continuing medical education programme for each health unit.

Integrated Management of Childhood Illness has a component on management of seizures, management of epilepsy and counselling. These areas may have to be strengthened with further training as continuing medical education and the referral and support supervision components are important. The advantages of the IMCI strategy are given in the section on Children's health and reiterated here. The savings in the consumer's time as well as efficient use of the limited personnel.

#### Interventions for People in Complex Emergency Situations.

There is a body of research on the best interventions to be put in place for people in complex emergency situations. These include a psycho-social component being integrated into emergency aid. It is possible to train people in listening and helping skills so they can offer immediate help to those who need it. However, long term interventions are also necessary in order to provide a comprehensive service. This too will utilise volunteer counsellors who are trained minimally but are supported by more qualified counsellors. The community based approach is recommended as it ensures that the community benefits from the intervention and the person receiving care remains in the environment. Recovery would then not be assigned to a more peaceful environment.

#### Interventions for Violence Against Women

There is debate as to whether centres are appropriate in the context of the developing world. It is possible to put in place day centres as well as a system for accessing services to those who need it. This could be community based counsellors as has been done in Uganda. Women that would normally offer this sort of support such as the wives of religious leaders and women leaders in the community are given listening and helping skills. They are also given a resource book with the relevant information for their community such as where the police station is, the legal practitioner, and health services. They are encouraged to form a network and to consult and refer to each other frequently. In Uganda, Family Courts are to be established and the women's organisation doing work in the area of violence against women is planning to integrate counselling services in these courts. It is also possible to train health workers so they provide the support and referral to the relevant authorities.

*Rehabilitative* is also important. Many people with mental disorders may have dropped out of school, may have lost their jobs and may even have a handicap as a result of the disorder. Burns are very common in relation to epilepsy and often lead to scars and contractures. Rehabilitative services will ensure that the person is able to contribute to the family income. If a child with mental retardation is given the skills for self care, the parent will have more time freed up to do productive work.

A programme that includes the three aspects of preventive/ promotive, curative and rehabilitative is likely to be the most successful. It is recommended that interventions be community based and community oriented. Mental health interventions are best when carried out as an intersectoral multi disciplinary effort. World Health Organisation recommends the formation of a Mental Health Co-ordinating Committee which would involve psychiatrist, psychologists, nurses, and the consumers of the services.

### **6.4.3 Major Outcomes: *Incidence Rates of Epilepsy, Suicide, Depression***

Most countries now have Health Services Information Systems. It is possible to disaggregate the relevant data from these systems but this has to happen at the lower levels of the system since mental disorders, including epilepsy are only listed under others. However, the primary data has this information and it is possible to collect is .

Other sources of data could be schools where retention rates in post conflict or emergency situations would indicate effectiveness of the intervention in place. Hospital casualty units can also provide data on victims of abuse which often over lap into household accidents.

### **6.4.4 Policy and Strategy Issues**

The main strategy as recommended by WHO is to integrate mental health into the primary health care system. This involves four main areas:

- Training of health workers to recognize and manage common mental health problems
- Setting up of an effective referral system
- Provision of support supervision.
- Ensuring that the basic/essential drugs are available at all levels of the health care system.

Some of the specific activities may include formulation/revision of a mental health policy, revision/formulation of the mental health act, development of standards and guidelines for the management of common mental health problems. It may be necessary to have a focal person for mental health within the Ministry responsible for health as well as at the district level.

### **6.4.5 Other External factors**

Gender issues relating to violence against women such as sexual abuse, other sectoral policies and how they impact on mental health. Such as universal primary education, implementation may not be well monitored or teachers/the system may not be prepared for the children with mental disabilities. Teachers and parents may refuse children with epilepsy from studying in the same classroom as the others. Integration of rehabilitation programmes is recommended but may not happen. Post Conflict rehabilitation may be planned in the Ministry of Finance, and may focus on roads and schools with little input from some of the other sectors so that the psycho –social area may not be addressed. This often leads to poor uptake /utilization of the structural rehabilitation.

### **6.4.6 Useful Resources & Tools**

**Contact at the World Bank:** Florence Baingana

*Useful Guidelines.*

Integrating Mental Health into Primary health care. WHO Publication  
World Mental Health: Problems and Priorities for the Developing World

***Useful Journals available on line***

American Journal Of Psychiatry  
British Medical Journal

***Useful Websites***

NIMH Website <http://www.nimh.nih.gov>.WHO

## Technical Note 3B: World Bank HNP Poverty Information Sheets

The World Bank's HNP Poverty Thematic Group has produced information sheets using DHS data for 48 countries showing the variations across economic groups of key HNP outcomes and determinants. The countries for which information sheets are available are listed below.

### COUNTRIES WITH HNP/POVERTY INFORMATION SHEETS

<u>Country</u>	<u>DHS</u> <u>Rnd.</u>	<u>Year</u>	<u>Country</u>	<u>DHS</u> <u>Rnd.</u>	<u>Year</u>
<b>AFRICA – 24 Countries</b>					
Benin	III	1996	Mali	III	1995/6
Burkina Faso	II	1992/3	Mozambique	III	1997
Cameroon	II	1991	Namibia	II	1992
Central Afr. Republic	III	1994/5	Niger	III	1998
Chad	III	1996/7	Nigeria	II	1990
Comoros	III	1996	Rwanda	II	1992
Côte d'Ivoire	III	1994	Senegal	II	1997
Eritrea	III	1995/6	Tanzania	III	1996
Ghana	III	1993	Togo	III	1998
Kenya	III	1998	Uganda	III	1995
Madagascar	III	1997	Zambia	III	1996
Malawi	II	1992	Zimbabwe	III	1994
<i>ASIA/NEAR</i>	<i>EAST/NORTH</i>	<i>AFRICA</i>	–	15	<i>Countries</i>
Bangladesh	III	1996/7	Nepal	III	1996
Egypt	III	1995/6	Pakistan	II	1990/1
India	III	1992/3	The Philippines	III	1998
Indonesia	III	1997	Turkey	III	1993
Jordan	III	1997	Uzbekistan	III	1996
Kazakstan	III	1995	Vietnam	III	1997
Kyrgyzstan	III	1997	Yemen	III	1997
Morocco	III	1993			
<i>LATIN</i>	<i>AMERICA/CARIBBEAN</i>	–	9	<i>Countries</i>	
Bolivia	III	1998	Haiti	III	1994/5
Brazil	III	1996	Nicaragua	III	1997/8
Colombia	III	1995	Paraguay	II	1990
Dominican Republic	III	1996	Peru	III	1996
Guatemala	III	1995			



## INDICATOR DEFINITIONS

The definitions of the indicators used in the World Bank HNP Poverty Information Sheets are presented below. In general, they follow closely the definitions used by the Demographic and Health Surveys program.

### Health, nutrition and population status indicators

Infant mortality rate: The number of deaths to children under 12 months of age per 1,000 live births. Figures used in the preceding tables are based on births in the 10 years preceding the survey.

Under-five mortality rate: The number of deaths to children under 5 years of age per 1,000 live births. Figures used in the tables are based on births in the 10 years preceding the survey.

Percent of children stunted: Percent of children whose height measurement is more than –2 standard deviations below the median reference standard for their age as established by the World Health Organization, the U.S. Center for Disease Control, and the U.S. National Center for Health Statistics. The figures in these tables are based on a sample of living children under three, four, or five years of age, depending on the country.

Percent of children underweight: Percent of children whose weight measurement is more than –2 standard deviations (moderately underweight) or more than –3 standard deviations (severely underweight) below the median reference standard for their age as established by the World Health Organization, the U.S. Center for Disease Control, and the U.S. National Center for Health Statistics. The figures in the tables are based on a sample of living children under three, four, or five years of age, depending on the country.

Percent of mothers with Low Body Mass Index (BMI): Percent of women whose BMI is less than 18.5, where BMI is defined as weight in kilograms divided by the square of height in meters and is a measure of adult nutritional status. In some countries BMI is presented for all sample women, while in other countries the figure is available only for mothers of children under five years old. For each country, the relevant denominator is noted in Technical Note A.

Total Fertility Rate (TFR): The average number of births a woman could expect to have during her lifetime if she followed observed levels of fertility for her age group at every age. The TFR is calculated as the sum of average annual age-specific fertility rates for all reproductive age groups (usually at least 13 and at most 50 years old) during the three years preceding the survey. For each country, the TFR is calculated based on a sample of ever-married women and then extrapolated by DHS to all women of reproductive age for that country.

Adolescent Fertility Rate (Age-Specific Fertility Rate for women 15-19 years old): The average number of births a woman age 15-19 could expect to have during her lifetime if she followed observed levels of fertility for that age group, expressed per 1,000 women aged 15-19. As with the TFR, the adolescent fertility rate is calculated as an annual average for the three years preceding the survey. The adolescent fertility rate is

calculated based on a sample of ever-married women and then extrapolated by DHS to all women ages 15-19 years for the country concerned.

*Health, nutrition and population service indicators*

Immunization rate:

Percent of surviving children age 12-23 months who received measles vaccine (line a); three doses of DPT and oral polio vaccine (line b); all vaccinations, namely BCG, three doses of DPT and oral polio, and measles (line c); no vaccines at all (line d). The figures are a combination of information recorded on the child's vaccination card, or, in cases where a card was not available to show the interviewer, as reported by the mother.

Diarrhea:

- *Prevalence:* Percent of surviving children under five years old who had diarrhea in the two weeks preceding the survey (line a), where diarrhea is defined by the mother's report of the presence of loose stools and (in some but not all surveys) the frequency of stools in a day.
- *Treatment:* Percent of children with diarrhea in the past two weeks who received oral rehydration therapy (ORT) which includes oral rehydration salts, recommended home fluids or increased liquids (line b); percent who were taken to any medical facility for treatment, defined as a private doctor, mission/hospital clinic, other private hospital/clinic, pharmacy, or a public facility (line c); and percent of those seen medically who were taken only to a public facility, defined as a government hospital, government health center, or government dispensary (line d).

Acute respiratory infection (ARI):

- *Prevalence:* Percent of surviving children under five years old who had a cough accompanied by rapid breathing in the two weeks preceding the survey, as defined and reported by the mother (line a).
- *Treatment:* Percent of children with a cough and rapid breathing in the preceding two weeks who were taken to any medical facility for treatment (line b); and percent who were taken to a public facility (line c). Definitions for facilities are the same as for treatment of diarrhea.

Antenatal Care:

Percent of births in the five years before the survey for which a woman received at least one antenatal care consultation from a medically trained person, defined as a doctor, nurse or nurse-midwife (line a); at least one antenatal care consultation from a doctor (line b); at least one antenatal care consultation from a nurse or nurse-midwife (line c); two or more antenatal care consultations from a medically trained person (line d). Note that lines (b) and (c) sum to line (a).

Delivery Attendance:

- Percent of births in the five years prior to the survey that were attended to by a medically trained person, defined as a doctor, nurse or nurse-midwife (line a); a doctor (line b); a nurse-midwife (line c). Note that lines (b) and (c) sum to line (a).
- Percent of all deliveries in the five years prior to the survey occurring in a public medical facility, defined as a government hospital, government health center, government maternity center and other country-specific public sector facilities (line d); a private medical facility, defined as a mission hospital/clinic, other private hospital/clinic (line e); at home, defined as own or any other home (line f). Note that

lines (d), (e) and (f) sum to 100 percent (with some allowance for rounding of numbers).

Use of Modern Contraception:

Percent of married women (line a) and men (line b) who report using any modern means of contraception, defined as male/female sterilization, oral contraceptive pill, contraceptive injection, intrauterine device, male/female condom, diaphragm, cervical cap, or contraceptive jelly or foam. For some countries, the sample includes couples in consensual unions. Information on male contraceptive use is not available for all countries.

Knowledge of HIV/AIDS Prevention:

Percent of women (line a) or men (line b) who report that they know of HIV/AIDS and know of at least one of the following means for preventing HIV/AIDS through interruption of its sexual transmission route: abstinence, using a condom, avoiding multiple sex partners, avoiding sex with prostitutes, and avoiding unprotected homosexual sex. In most cases, all survey respondents regardless of marital status are asked this question; where a particular survey has only an ever-married sample, the data are extrapolated by DHS to all men and women. This information is not available for men for some countries, and not available for either men or women for some countries.

### **Technical Note 3C: Child deaths in Bolivia are preventable**

Results of Bolivia's largest mortality survey show that Aymara Indian children under five years of age are dying of easily treatable diseases. The survey—conducted by BASICS in El Alto, outside La Paz—was designed to answer two questions: Why are Aymara children dying? What prevents them from receiving life-saving care? To answer these questions, 271 caregivers of children who had died were interviewed to determine what behaviors may have contributed to the children's deaths.

El Alto is peri-urban community of approximately 500,000, most of whom are Aymara Indians who have migrated to the city from Bolivia's rural areas. Literacy is low. Traditional attitudes, beliefs, and practices are a major part of everyday life. Traditional medicine, with its focus on supernatural causes for physical illness, is a frequent source of health care outside the home. In this setting, treatable illnesses such as diarrheal disease and acute respiratory infections are the main causes of death among Aymaran children.

During the survey interviews, each caregiver gave detailed accounts of the events surrounding the death of the child, the symptoms the child displayed, the actions of the caregiver, and the types of help or services that were sought. If the caregiver consulted formal health care services, the interviewer reviewed the medical records.

These stories revealed that the caregiver often was unable to recognize the symptoms of serious illness. In most cases, it did not matter whether the caregiver recognized symptoms; no outside care was sought. If symptoms were recognized, many times it was too late. The caregiver often did not know where to go for help or sought the help of traditional healers. Often these treatments did nothing and may have, in some cases, contributed to a child's death. Long-held attitudes and beliefs combined with lack of knowledge and awareness of childhood illnesses were barriers to seeking and receiving

proper health care. The stories painted a picture of the rapid march from illness to death, usually within three days of the onset of illness.

The results of the survey showed a sad and alarming trend. Ninety percent of the child deaths examined in the survey had occurred by age two. One-third of these deaths were in infants less than a month old. Nearly half of these died in their first day of life.

BASICS and Ministry of Health (MOH) officials examined the accounts to identify intervention points throughout the caregiving process that could help prevent child deaths in the future. In addition, the survey process enabled BASICS and the MOH to design a methodology for gathering child mortality data using community participation, an important step in helping the MOH keep abreast of health care needs.

The methods and results of the survey are available through the Information Center at the BASICS Project, Suite 300, 1600 Wilson Boulevard, Arlington, Virginia 22209. Or go to: [http://www.basics.org/highligh/M&E/Highlights\\_M&E\\_1.htm](http://www.basics.org/highligh/M&E/Highlights_M&E_1.htm)

## **Technical Note 4A: Household behavior, income, knowledge and utilization patterns**

### **Introduction**

There is a temptation to view the problem of improving health outcomes amongst the poor in technocratic terms—identify the diseases that disproportionately affect the poor, identify the interventions that are effective in reducing these diseases, cost them, and then design a package of cost-effective interventions. While this work is useful, it covers only a part of the story. It overlooks certain key factors that make the difference between a successful set of health policies and an unsuccessful set.

Interventions have to be delivered through a health care system, staffed by administrators and providers, and overseen by bureaucrats and policymakers. All are human beings and respond to incentives—financial incentives as well as non-financial incentives, such as professional recognition and pride. A common theme in the Bank's recent *Voices of the Poor* consultation exercise [1] is how negatively the poor perceive government officials generally and public health providers and staff in particular—perceptions of rudeness and corruption were commonplace. A failure to recognize that interventions are delivered by people means missing out a key ingredient of success. It may well be no accident that Sri Lanka stands out both as a high achiever, given its income, on several key HNP outcomes [2], and in the *Voices of the Poor* consultations “as a country where poor people, with few exceptions, spoke with appreciation of government hospitals, good and polite doctors ...” [1, p.37].

Patients and households are, of course, the other key group left out of the technocratic approach. These too are people and, like providers, respond to incentives, whether in the form of costs (money and time prices) or benefits (perceptions of quality of care). There is a temptation to treat patients and households as passive actors in the health system. Yet consultations with patients and econometric evidence suggests that households are relatively well-informed about the costs and benefits associated with the alternatives facing them, and make their choices accordingly. The developing world is littered with examples of households failing to use facilities to which they have access.

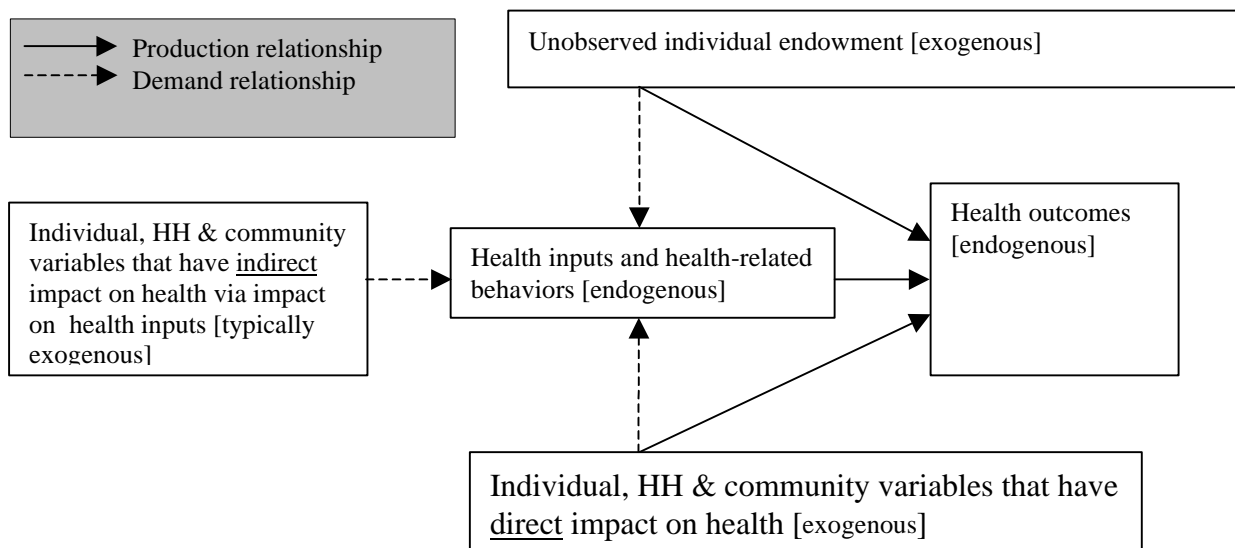
Non-users are articulate in their reasons for not using facilities. In a survey of allopathy users in Bangladesh, for example, two factors stood out as reasons why patients did not use government health centers—the unavailability of medicines and the inadequate attention of physicians [3]. Assuming that patients will simply show up to receive interventions, come what may, can lead the analyst as far astray as assuming away the problems associated with getting a well-functioning health care delivery system.

It is with the role of households as producers of health and demanders of health services that this Note is concerned.

### Households produce health

It is in the household that good health ultimately gets “produced” [4]. This is shown schematically in Fig 1. To produce health, households combine time and market goods—medical care but also other health-promoting goods such as nutritious food—and engage in various behaviors, some of which are beneficial to health, such as good personal and food hygiene, but some of which are damaging to health, such as cigarette smoking. Health outcomes of household members are also affected by their health endowment at birth, and by a variety of factors that are not chosen by the individual or household (at least not in the short run) but which have a direct effect on an individual’s health. Examples include the individual’s age, the water and sanitation conditions of the household, and those of the community in which the household lives.

Fig 1: Household production of health



The household chooses how much of its resources to devote to the production of health—good health is but one of the good things in life, and households will form a judgement about the benefits to be derived from being in good health and the costs involved. The benefits, especially for the poor, are likely to derive from the fact the good health is essential to work. As the authors of the *Voices of the Poor* synthesis put it, “Health and physical wellbeing are of value in themselves. But for poor people a strong body was seen as a crucial precondition for being able to work” [1, p.10].

The costs take the form of the time and money prices people incur in using health services, buying and/or fetching water, preparing food, and so on. These costs can be substantial, especially for the poor. The poor typically have to travel further to health centers and to wait longer when they get there. In South Africa, for example, those in the poorest quintile had to travel almost two hours on average to obtain medical attention, while those in the top quintile traveled only for 34 minutes on average [5]. The poor often face higher prices for other health inputs too. A recent report for the *World Commission on Water for the 21<sup>st</sup> Century* found that “the poor then end up buying water, which can be dirty and contaminated, from water vendors at many times the subsidized price the rich pay for treated, piped water: 60 times more in Jakarta, Indonesia; 83 times more in Karachi, Pakistan; and 100 times more in both Port-au-Prince, Haiti and Nouakchot, Mauritania.”<sup>50</sup>

In addition to deciding how much resources to devote to health vis-à-vis the other good things in life, the household decides which particular mix of market goods and time to use, and which particular mix of health-promoting or health-damaging behaviors to adopt. The choices here are, again, governed by relative costs and perceptions of relative benefits.

### **Some implications of the household production approach**

Viewing households as the ultimate producers of health and recognizing that households ultimately demand health services has important implications for policy.

**Prices matter.** The demand by households for health services is sensitive to the money price they are charged. In Kenya, for example, it has been estimated that an increase in public fees from nothing to 10 Kenya shillings would result in a reduction in the use of public facilities by 18% [6]. In Ghana, an increase in public sector user fees by 50% has been estimated to reduce demand in public clinics by 6% [6]. It is not just fees that deter the prospective patients—it is also the *uncertainty* surrounding payments in environments where informal payments are rife. The deterrence effect of user charges is one factor explaining why government subsidies for health care in the developing world typically fail to reach the poor [5].

**Time costs matter.** It is not just money prices that matter—time costs are also important. In Ghana, for example, a reduction of 50% in the distance to public facilities has been estimated to lead to a doubling in the use of public facilities, while in Kenya it has been estimated that a 20% reduction in distance to public facilities would increase use of public facilities by nearly 2% [6]. Time costs are also a factor in explaining why public subsidies fail to reach the poor [5].

**Income matters.** Health care is an economic good, in the sense it responds to prices and income. Furthermore, it is a “normal” good—demand for it increases with income. The better-off demand more health care than the poor. Indeed, they often demand not just more private sector care but also more *public* sector care—in Cote d’Ivoire, Ghana, Guinea, Madagascar and Tanzania, LSMS survey respondents in the top quintile, compared to those in the bottom quintile, were more likely both to seek care when ill *and* to seek *public* care rather than private care [5]. The influence of income on service use is another factor in explaining why public subsidies fail to reach the poor [5].

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<sup>50</sup> Reported in the Bank’s *Today* online newspaper 11/8/99.

**Quality matters.** Households are not the passive uninformed users of the health system they are often taken to be. Even poor households modify their demand for health services in the light of assessments of its quality—key are the availability of drugs and medicines, service (including staff attitudes and honesty), and the quality of infrastructure. In Ghana, for example, it has been estimated that if the percentage of public facilities with drugs available increased from 66% to 100%, the use of these facilities would increase by 44% [6]. Studies of willingness-to-pay for changes to health services put quality improvements near the top of the list of things respondents are willing to pay for. Unsurprisingly, the better-off are “willing” to pay more for quality improvements than the poor, but willingness to pay for quality improvements is still significant amongst the poor [6].

**Households substitute within the health sector.** A key insight of the household production function approach is that households substitute between and within different types of inputs used to produce health. They substitute between different types of medical services—public and private, formal and informal, etc—and in some cases, substitute medical care for other health inputs, including self-treatment. In Ghana, for example, it was estimated that a reduction of 50% in the distance to public facilities would lead to a reduction of 15% in the use of private facilities, and that a 50% reduction in distance to private facilities would lead to a similar reduction in the use of public facilities. In both cases, it was estimated that the reliance on self-care would also fall—by around 3% in both cases [6]. The degree of substitution is higher for better-off households. The scope for substitution can help explain two important empirical regularities. One is the disappointingly low estimates in the literature of the effect, at the margin, of public health expenditures on health outcomes [2]—one explanation of this may be that with the introduction of subsidized care, households simply substitute from private sector care to public care, so that the net effect on health outcomes, especially if the public sector care is less effective, may be minimal in the population at large [7]. The second regularity it explains is the apparent greater impact of public health expenditures on the poor [8, 9]—the poor typically use the private system somewhat less and hence the crowding-out of private sector care by public sector care is likely to be smaller [7].

**Households substitute between health care and other inputs.** Another key insight of the household production approach is that households do not rely exclusively on health services to produce health but instead choose a mix that reflects the relative costs and expected health benefits of different inputs and behaviors. Studies of the links between health outcomes and the proximate determinants of health—i.e. health production functions—find that health service use is just one of the factors that influence health outcomes. Other influences seem, in fact, to be more important. This is most dramatically illustrated at the national level—in one recent study [2] less than one seventh of percent of the cross-country variation in the under-five mortality rate could be explained by cross-country differences in per capita health spending. In a study of the proximate determinants of diarrhea amongst small children in Cebu [10] it was found that whether or not the child had received preventive health care had a much smaller impact on the probability of diarrhea than whether the child had been exclusively breastfed, whether or not its household had a good water source, and whether or not its household had good excreta disposal.

**Household choices and assessment of program impact.** In the technocratic approach, in which households are viewed as passive recipients of health services, analysts can end up drawing highly misleading conclusions about program impact. A good example is the impact of antenatal care on birth outcomes [4]. Use of standard regression techniques to estimate the effects of timing of antenatal care on birth outcomes (e.g. birth weight, gestation, and probability of infant death) often leads to disappointing results—delay in obtaining antenatal care in the US has been estimated using these simple techniques to lead to only small reductions in birthweight and gestation, and to a *reduction* in the probability of a infant death. These analyses fail, however, to take into account that women who anticipate adverse birth outcomes will deliberately seek antenatal care earlier than they would otherwise have. Mothers who fear their child might die in the first year of life, for example, will be less likely to delay seeking antenatal care, and the results reflect this. Use of econometric techniques that treat the timing of antenatal care as a *choice* results in a positive and statistically significant impact of delay in receipt of antenatal care on the probability of infant death in the US [4]. Similar results are available for the developing world—in the aforementioned study of diarrhea incidence in Cebu, for example, when breastfeeding was not treated as a choice, exclusive breastfeeding was estimated to have no significant impact on the incidence of diarrhea, whilst treating it as a choice produced a significant negative effect [10].

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## Technical Note 4B: An illustrative example of using information about clients to better manage vaccine-preventable illness in rural India

The conceptual framework suggested in the Health Chapter of the source book lends itself to practical applications for addressing the health of the poor. In the case discussed in this technical note recognizing the importance of household actions and community risks offers an attractive perspective for focusing sectoral policies on the poor as well as developing implementation plans that directly reach the poor. Using a diagnostic and policy development framework similar to the logical framework suggested in the chapter, this brief example illustrates how starting with outcomes and outputs for the poor, then listening to vulnerable communities and linking findings to the health delivery system can result in practical policies for reaching the poor.

It is important to note that the work on strengthening immunization in India includes other important factors not discussed here. Selectivity was used to keep the illustrative example simple and targeted. A more complete presentation is provided in Project documents including the World Bank's Project Appraisal Document.

### Focusing on the outcomes of the poor

As indicated in the main chapter, there is threefold difference in the child mortality rate amongst the richest fifth of households in India and the poorest fifth. The income-related differences are similar for infant mortality. Burden of disease findings link the high levels of infant and child mortality to communicable and vaccine preventable illnesses. In other words, if the children of poor families in India are dying at a much higher rate than those of wealthier families, there is a likelihood that preventive life-saving services are not reaching the children of the poor.

Looking then at the health sector output that most links the system to infant and child mortality, immunization, three nationally representative household surveys in 1993, 1996 and 1998 confirm that the children of poor and socially vulnerable families in India are least likely to be immunized. Table 1 shows the level of inequality in a number of immunization measures. While the overall level of immunization coverage appears to me very low, the level of inequality is even more stark. The last two rows in that table show that the children of the wealthiest 20 percent of households in India are four time as likely to have receive some vaccinations than children of the 20 percent poorest families and three time as likely to have received all routine vaccinations.

**Table 1: Demographic and Health Survey 1992/93, Wealth and Immunization Coverage, India**

<i>Immunization type</i>	Poorest 20%	2 <sup>nd</sup> poorest 20%	Middle 20%	2 <sup>nd</sup> richest 20%	Richest 20%
Measles	27.0	31.0	40.9	54.9	66.1
DPT 3	33.7	41.1	51.8	64.6	76.7
All vaccinations	20.2	25.1	34.1	46.9	59.8
No vaccinations	44.7	38.9	28.8	18.8	11.5

### Listening to vulnerable families

The critical household action needed for a child to be immunized is for the household to seek a health care provider that has the inputs needed to perform the immunization—vaccines, cold-chain equipment, training, supplies, etc.. But for the household action to take place, the following interrelated conditions should exist:

1. Decision-makers in the household need to know about immunizations and should believe that it is important for child survival and well being.
2. Financial resources are needed for the household to seek care. Money is needed for transportation, productive time lost in seeking the provider, and payments for the provider (official or unofficial).
3. Physical access to a provider with some element of trust in her/him.

To help determine the relative importance of the three conditions in India, the 1998 household survey asked households with un-immunized children why they did not seek this life-saving preventive service. While all three conditions listed above were mentioned, two specific answers—both related to knowledge—accounted for more than 63% of responses. 30% of respondents were not aware of the need for immunization and 33% were not aware of the time and place the immunizations were to be provided.

Once it is established that the information gap is an important determining factor, it is essential to find out how to reach the poor and socially vulnerable with behavior change communication interventions. The 1998 household survey provides a partial answer by examining the likely interactions between the targeted group and the health system. In the case of the poorer states in India, the most likely point of contact between the health system and the poor and socially vulnerable groups is the Auxiliary Nurse Midwife (ANM). ANMs represent the primary source of immunization coverage for the poorest, least educated, and lower castes and would be the appropriate service delivery mechanism to target for delivering immunizations and information.

Passive forms of listening to the poor, through household and other surveys, can provide policy makers only with partial answers. There is a need to supplement this with more active forms—qualitative data collection—in order to get a better and deeper understanding of the determinants and constraints facing household actions. In the context of immunization in India, the 1998 survey identifies ANMs as an important venue for health communications. But other important information mediation mechanisms also exist. Social assessment work is useful in seeking to explore more fully how knowledge is disseminated to the target clients. Listening to the targeted clients can inform the design of a communication strategy to address the information gap and increase the probability that poor households seek immunization for their children.

### **Community influences matter too**

The work, highlighted above, on improving the reach of life-saving immunizations represents an HNP output serving the “HNP outcome” of children free of vaccine-preventable diseases. But the provision of vaccines is one of several interventions that can contribute to achieving this HNP outcome. Analysis of risk finds poor household to be especially vulnerable to vaccine-preventable communicable diseases because of the sanitation conditions in poor rural communities and urban slums. While the health sector has limited scope for addressing the sanitary conditions, working with other elements of the Indian Government and other development partners can help decrease the risk for children in poor household. An example of collaborative efforts is the creation of geographic information systems on poverty and disease burden that can be used to

improve resource allocation. Resources managed by health and infrastructure activities can then be co-targeted at the most vulnerable segments of society.

### **The role of players in the health system**

The discussion of the role of the Auxiliary Nurse Midwife in delivering both the information and immunization to families in rural India assumes a dominant service delivery role for the Government of India. Simple market analysis can shed light on the current roles of the private and public sectors and on possible future partnerships.

While more than 70 percent of total health spending for curative care in India is used to purchase private health services, the picture is different for the provision of immunization services. The 1998 household survey shows the private sector to play a very small role in the provision of immunization, especially in rural India. State-level data show private sector delivery of immunization services ranging from a high of about 23 percent in AP, Kerala and Tamil Nadu to less than 5 percent in Orissa, MP and West Bengal. Moreover, most private sector delivery is focused in the urban sector. Market analysis provides some answers for the reluctance of private providers to provide immunization services. Providers identified the cost of buying and maintaining cold storage equipment and the low returns from limited demand as important factors in the decisions not to provide the service.

The role of the private sector in delivering immunizations for the rural poor is limited especially in the poorer states. The short term strategy should then focus on making the public sector more effective in service delivery while using both private and public sector actors to address the informational gaps largely responsible for the low demand for life saving services.

### **Summary**

Starting with household survey data on Immunization in India, the household perspective focused analysis and guided policy development by tracing policy levers likely to positively impact household actions. Monitoring and evaluation systems can then be developed by focusing limited resources on the most critical determining factors. By recognizing the added risks created by environmental factors in poor communities, inputs typically outside the health sector can be co-targeted to maximize the probability of achieving a shared health outcome.

## **Technical Note 4C: Tools for analyzing HNP behaviors**

A key step in understanding HNP behaviors—both at the national level and amongst certain groups, such as the poor—is quantifying the determinants of behavior. For example, how much longer do the poor take to get to health facilities than the better-off? How much better equipped are health facilities in better-off areas than they are in poor areas? And so on. Survey data are useful for this task—not only household surveys, but also facility surveys and community surveys. Many have been undertaken already and summary and tabulated data are often available. These tabulations are useful in formulating policy decisions—for example, poverty maps derived from household survey data are useful in allocating public expenditures across regions and districts.

## Tools for quantifying the determinants of HNP behaviors

### *Household survey data*

These provide valuable information on a number of determinants of HNP behavior and outcomes. These can be used to quantify the determinants of HNP behaviors—both for the population as a whole, and for specific groups, such as the poor. Very often, published tables are available showing sample averages, but also the gaps between households at different points in the income distribution. Thus using household survey data does not always entail analyzing the raw data from a survey, let alone undertaking a new survey.

### Income and consumption.

Household surveys often contain income or consumption. For many countries, tabulated data are already published—the published version of the World Bank's *World Development Indicators*, for example, provides data on inequalities across economic groups in income or consumption, and on income poverty, for many countries. Inequalities in income vary considerably across countries. Household data can be linked to census data to produce poverty maps—these can be useful in identifying poor districts and neighborhoods. Sometimes, neither income nor consumption are available. In this case, proxies (such as the type of material the household's floor is made of) can be useful, especially for examining the differences in HNP behavior determinants between poor and nonpoor households. (See the Poverty Diagnostics chapter in this volume for further material.)

Education and knowledge. Household surveys often contain information on educational attainment and literacy of household members. Educational attainment and enrolment is lower amongst poorer households, though the gaps varies across countries. Many surveys also contain some information on health-specific knowledge—e.g. on knowledge of HIV/AIDS issues. Of special importance here are levels of general education and health-specific knowledge amongst women and girls.

Intra-household inequalities in control over resources. Some household surveys—e.g. the Demographic and Health Survey—asks about women's control over any earnings

### **Box 1: Poverty Maps**

**The aim.** To construct reliable measures of living standards for small geographic or administrative units to aid policy-makers in their efforts to target social and infrastructure spending.

**Data requirements.** A multipurpose household survey such as an LSMS (with income recorded) and a census (without income recorded).

**Methods.** The household survey is used to estimate a relationship between household income or consumption and household characteristics. This relationship is then “projected” onto the census data to predict the incomes or consumption of census households.

**Who has poverty maps?** Maps have been produced using these techniques for Ecuador, Panama and South Africa. One is being constructed for Nicaragua.

**How are they being used?** The South African government will be using their poverty map to aid them in implementing their “equitable shares” grant to municipalities for social spending. The government of Panama is using it to allocate spending for Social Funds, IDB projects, land titling, and school feeding programs. The government of Nicaragua plan to use their map to set criteria for Social Funds eligibility, and are incorporating it into their PRSP.

they have from the labor market, and about their involvement in family planning decisions.

Accessibility of health services. Household surveys often ask respondents about the distance or time take to travel to local health facilities. Tabulations by household income can be revealing. Survey data in South Africa reveal that people in the poorest fifth of the population have to travel almost two hours on average to obtain medical attention, while people in the top quintile travel only for 34 minutes. In Sri Lanka, by contrast, people in the poorest quartile traveled 4.7 km, on average, to obtain medical attention, whilst people in the richest quartile traveled 3.3 km, on average.

Insurance coverage and fee waivering. Household surveys often contain information on insurance coverage and entitlement to any fee waivers. Tabulations by income reveal, unsurprisingly, that private insurance coverage rises with income. More worryingly, they also often reveal that public insurance coverage is also more common amongst better-off households.

Availability, accessibility and costs of water and sanitation. Household surveys often inquire about the type and location of drinking water and sanitation facilities used by households. Tabulations by income often reveal some large differences between poor and nonpoor households in availability of good drinking water and sanitation. Tabulations of drinking water type and source and sanitation type and location by wealth group are currently being prepared by the World Bank for 48 countries, along the lines of the Bank's HNP Poverty Information Sheets (see Technical Note 3.1). It is not just type and location of drinking water source that varies by economic status. A survey undertaken for the *World Commission on Water for the 21<sup>st</sup> Century* investigated the costs of drinking water in various countries, for both poor and nonpoor households. It concluded that the price paid by the poor for their water is often "many times the subsidized price the rich pay for treated, piped water: 60 times more in Jakarta, Indonesia; 83 times more in Karachi, Pakistan; and 100 times more in both Port-au-Prince, Haiti and Nouakchot, Mauritania."

#### *Government statistics and facility surveys*

Availability. The issue here is the level of (potential) supply of a particular type of service. This could be very broadly defined in terms of facilities—e.g. a hospital. Or it could be more narrowly defined in terms of interventions or packages of interventions—e.g. an ARI program. To be meaningful availability indicators of either type have to take into account the physical size of the area served and the size of the population in the area. There are thus two possible ways of measuring availability.

- First, there are measures of the proportion of the population living within a reasonable distance of a particular type of health facility, or a facility offering a particular type of intervention or package of interventions.
- Second, there are measures of the service supply relative to the population served—e.g. the number of hospitals (or hospital beds) per 1000 population, or the number of facilities offering a particular intervention or package of interventions per 1000 population.

Two useful compendia of health service indicators exist, both of which present possible measures of availability. These are USAID's (undated) *Health and Family Planning Indicators: A Tool for Results Frameworks*, and Knowles et al.'s (1997) *Measuring*

*Results of Health Sector Reform for System Performance: A Handbook of Indicators.* It is important not just to assemble data on availability at a national level, but to do it for areas within the country so that it is possible to see how well the poor fare. This could be done via a poverty map, as is done, for example, in Peru—one can then see how poor and less poor *areas* fare in terms of the availability of health services. Or one can link availability data to household survey data—one can then see how poor and less poor *households* fare in terms of the availability of services in their geographic area.

Quality. Information on quality is harder to come by. Official statistics often provide information on the availability of drugs, medicines, growth monitoring and immunization programs, and so on. Aside from the fact that they are rather crude measures of quality, they also often paint a rosier picture of quality than is warranted. A facility survey in Côte d'Ivoire found a substantial divergence between drugs and medicines that were *supposed* to be available, according to government records, and those that were *actually* available, according to the facility survey. Despite the crudeness of the quality measure, the facility survey revealed some worrying gaps between poor rural areas and better-off urban areas in the proportions of facilities with immunization and growth monitoring programs.

More sophisticated instruments for assessing quality via facility surveys are available for some HNP outcomes. WHO's *Topical List of Priority Indicators for IMCI at Health-Facility Level* provides a useful instrument for assessing quality in the management of childhood illness. Surveys undertaken using this instrument suggest some huge variations in quality across countries (see Box 2). This data could be linked to a poverty map or to a household survey to get a sense of how the poor fare in the country compared to the better-off.

**Box 2: The quality of IMCI services can be assessed—and varies internationally**

In Burundi, only 3% of children with diarrhea were correctly assessed and only 13% correctly rehydrated. In Vietnam, by contrast, the figures were 78% and 67% respectively. In Indonesia, only 2% of pneumonia cases were managed correctly and only 4% of caretakers were correctly advised. The figures for China were 73% and 75% respectively.

Source: WHO (1998).

Prices. As with quality, government statistics can in principle provide data on the prices charged for different services, and the categories for which fee waivers exist if any. In practice, facility surveys provide more accurate information on both, not least because fee waiver programs can—and are often intended to be—subject to local interpretation and implementation.

*Community surveys*

The respondents in these surveys are usually senior and often professional people in the community—village elders, school teachers, health service officials or providers and so on. They are useful in getting a picture of the key features of different communities—the infrastructure, the natural features (proneness to flooding, etc.), the health and education facilities available, etc. They can often shed light on the extent of social capital.

Community surveys can also often help in the quantification of environmental influences on HNP behaviors and outcomes (altitude, proneness to drought and flooding, etc.).

### Tools for assessing which determinants matter most

It is one thing to know and to be able to quantify the various possible influences on HNP behavior. It is another to know how *important* each one is—how responsive HNP behaviors, and hence HNP outcomes, are to the various determinants. Travel time to health facilities, for example, may differ hugely between the poor and nonpoor, but it may be that, at the end of the day, utilization behavior is far more responsive to other factors that are less unequally distributed than travel time. Various approaches are possible to explore this issue.

### Focus groups, consultation exercises and in-depth interviews

These are a very valuable way of establishing both which factors are important in shaping HNP behaviors but also which factors appear to be more important than others. The World Bank's *Voices of the Poor* exercise, for example, provided many insights into factors affecting the poor generally, but also into the factors influencing the HNP behavior of the poor. An collation of the results is available, but so too are the reports from 17 countries.

#### Box 3: Views on Government Health Services

"Poor people's experiences with government institutions are largely negative, even when government programs were rated as important; rudeness, corruption and poor quality services seemed to be the norm, whether in health care or in programs of social support. The presence of NGOs in the various countries is uneven but, where they are at work their contributions are generally well regarded."

"Again and again the behavior and attitudes of officials and service providers humiliate and deter poor people. This is most acute in terms of violent and corrupt behavior. Of slightly lesser intensity, rudeness, arrogance, and insensitivity were widely reported as well. In Brazil poor women said, "if you are in labor they treat you as if it is an offense." In Jugen, Bulgaria the poor recommended, "the doctors should be kind and polite, they had taken a special oath, this is their business. They have to be welcoming and talk with everybody, to listen to one's problems. But they are not. Most of them are quite rude; they make people wait for several hours at their cabinets' door while they drink their coffee inside."

"Corruption in health services makes it even more difficult to access health services. The poor in the village of Borg Meghezel, Egypt said, "there isn't a single tablet in the clinic and the doctor has turned it into his private clinic."

Source: *Global Synthesis: Consultations with the Poor*, by Deepa Narayan, Robert Chambers, Meera Shah and Patti Petesch, The Poverty Group, The World Bank

A recent World Bank study in El Salvador used the focus group approach to explore the factors behind the under-utilization of rural health posts. The sessions identified a number of key factors, including: poor physical access (poor roads, lack of public transport, long distances traveled by foot, horse or mule); limited opening hours, long waits and staff absences; lack of resources in the health posts, especially drugs; higher drug costs at health posts (free or subsidized at hospitals and health centers, not at health posts); and higher levels of satisfaction at health centers and hospitals, with a strong preference for health centers locally.

An older World Bank focus group study in Nigeria also proved highly effective in addressing the same question that was addressed in El Salvador. Similar issues arose as the two countries, but the groups in Nigeria devoted much of their discussion to the attitude of health service personnel, who were perceived as harsh, rude, uncaring and off-hand. Nepotism was also a complaint, enabling relatives and friends of health service personnel to skip registration lines and obtain drugs that were officially out of stock. By recording the time spent discussing particular issues, assuming the discussion is not tightly controlled, may allow those organizing the study to move beyond a simple list of factors influencing choices to a assessment—albeit a somewhat crude one—of the relative importance of different influences on utilization patterns, or whatever aspect of HNP behavior it is that is under investigation.

### **Simple tabulations from surveys**

Many household surveys, including the World Bank-sponsored Living Standards Measurement Surveys (LSMSs), ask interviewees about the reasons behind particular choices and behavior patterns, including the non-use of HNP services in the event of illness, the non-takeup of immunization services when available, and so on. An illustration of the usefulness of these questions is the Indian case study reported in Case study 1. The survey used asked respondents to indicate which factor from a list was the main reason why the household had not immunized the child. This revealed that a major factor behind the failure of households to immunize their children was lack of information. Cross-tabulations of responses by some measure of household resources can provide insights into whether certain factors underlying behavior (e.g. knowledge) are more important amongst the poor than amongst the non-poor.

In some cases, household surveys may—due to their design—not reveal as much as one would like about the causes of HNP behaviors. In such cases, the collection of new data geared specifically to the task in hand may be worth considering. The USAID-funded BASICS project provides a good example. The study aimed to improve the understanding of the causal factors underlying under-five deaths in the city of El Alto. Deaths were monitored through cemeteries, the civil registry and various other sources. Mothers of children dying were then interviewed using a variety of survey instruments, including and unstructured “open history and verbal autopsy” which collected information “as told” by the mother, “daily process reports collecting information on practices, attitudes, daily events, etc. during the child’s illness, and a form collecting socioeconomic data. The data from the verbal autopsies were subsequently coded. The study produced some interesting—albeit rather negative—results: only 60% of mothers who knew their child’s illness was severe sought help; and travel time was not a major factor in deterring mothers from seeking care from formal health service providers.

### **Regression analyses of behaviors and outcomes**

By using regression analysis on household survey data, one can—at least with good data—look at the impact of one determinant on HNP behaviors, *holding constant other determinants*. This technique also allows one to make predictions about the *size of impact* on HNP behavior of changes in the determinant in question.

In Cebu, the Philippines, for example, regression results suggest that in a one-year increase in maternal education is associated with *reductions* in the probabilities of exclusive breast-feeding and any breast-feeding by 36% and 5% respectively, but with an *increase* in the number of calories by 7%, the use of preventive HNP services by 4%,



and the use of soap by 2%, and a reduction in the probability of poor excreta disposal by 9%. These can then be coupled with estimates of the impact of these behaviors on HNP outcomes to assess the impact of mother's education on HNP outcomes. In the Cebu case, it was estimated that the changes described above would bring about a 3.2% reduction in the probability of diarrhea at age six months—a 5.2% reduction due to increased calories, preventive care use and better excreta disposal, offset by a 2% increase due to reduced breast-feeding.

Regression analysis has been used in a number of developing countries to quantify the impact on HNP behaviors and outcomes of a variety of different determinants. (See Poverty Diagnostics and the Monitoring and Evaluation chapters in this volume on the methodology of regression analysis in this context.) Some examples will illustrate both the usefulness of regression analysis as well as how estimated effects can vary across countries, and even within countries across different behaviors and outcomes.

- *The effect of HNP service availability.* In Nigeria, total facility expenditure per capita in the population served (in effect a measure of availability) was found to significantly influence the choice of facility as well as the choice of whether or not to seek care. In Malaysia, the number of nurses per capita was found to have a significantly positive effect on the use of prenatal care services, while opting for an institutional delivery was found to be significantly related to the availability of maternal and child health services and to the availability of private hospitals and clinics. The availability of child health services has been found to have a significant influence on child survival and weight-for-height in Ghana. In India, the presence in the community of a family planning program, a hospital and a dispensary have all been found to reduce child mortality, though in the same study other health facilities were found to *raise* child mortality. The coefficient estimates from these studies would enable simulations to be undertaken of the effect on service usage and on child survival and malnutrition of increasing availability by specific amounts.
- *The effect of HNP service accessibility.* In Ghana, simulations suggest that a reduction of 50% in the distance to public facilities would lead to a doubling in the use of public facilities. In Kenya, it has been estimated that a 20% reduction in distance to public facilities would increase use of public facilities by nearly 2%. Households substitute between facilities depending on their accessibility. In Ghana, it was estimated that a reduction of 50% in the distance to public facilities would lead to a reduction of 15% in the use of *private* facilities, and that a 50% reduction in distance to private facilities would lead to a similar reduction in the use of *public* facilities. Also in Ghana, it was found that distance to health facilities was significantly and inversely associated with weight-for-height, though *not* with height-for-age or with survival (indeed the coefficients suggested a beneficial effect on survival of distance). In the Côte d'Ivoire, by contrast, distance to the nearest health facility was found to be significantly and positively related to child mortality.
- *The effect of HNP service quality.* In Ghana, it has been estimated that if the percentage of public facilities with drugs available increased from 66% to 100%, the use of these facilities would increase by 44%. In Sri Lanka, it has been estimated that households are more likely to bypass local facilities if, compared to a more distant facility, the bypassed facility has inferior drug availability, is open for fewer hours per week, and has a poor appearance. In Ghana, it was found that drug availability in rural areas had a significant positive effect on height-for-age, though not on child survival.

- *The effect of the prices of HNP services.* In Kenya, it has been estimated that an increase in public fees from nothing to 10 Kenya shillings would result in a reduction in the use of public facilities by 18%. In Ghana, an increase in public sector user fees by 50% has been estimated to reduce demand in public clinics by 6%. Also in Ghana, health service fees have been found to have a significant and negative effect on height-for-age and weight-for-age in rural areas, but not in urban areas or on child survival.
- *The effect of availability of water and sanitation facilities.* A regression analysis in Nicaragua found that the presence of sewers in the community reduced the duration of breastfeeding, holding constant other determinants of breastfeeding duration. The availability of tap water has been found to significantly reduce child mortality in India, while poor sanitation and poor water in the household's community was found to significantly reduce the survival prospects of children in Ghana.
- *The effect of food prices.* Some regression studies find that higher food prices have a significant harmful effects on of child survival and child malnutrition. This is true of two studies of Ghana, for example. It is not true, however, of Bicol in the Philippines or of the Côte d'Ivoire—in both countries food prices have the opposite effect on the HNP outcomes in question from that expected.
- *The effect of accessibility of food.* In Ghana it was found that distance to the local market had a significantly positive impact on child mortality.

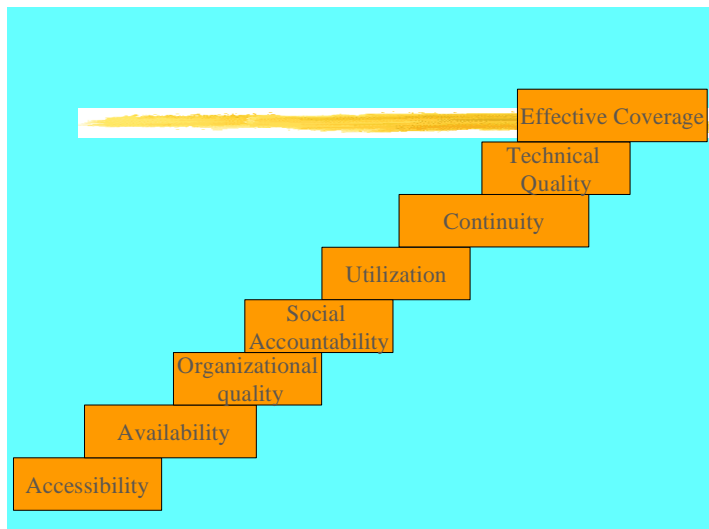
## Technical Note 5A: Assessing health sector performance

This technical note describes methodologies, sources of data, and indicators to analyze the performance of the health sector in supporting households to improve HNP outcomes. It is designed to be used in conjunction with the discussion in section 5 of the health chapter of the PRSP toolkit. The goal is both to provide an *assessment* of sectoral performance, and to understand *why* constraints to performance persist, in order for the sector to design most appropriate strategies. The sector's performance is assessed according to its capacity to:

- reach the poor by providing key outputs that influence the household production of health (“determinants” of coverage with a minimum package of activities)
- channel resources to the poor by funding pro-poor interventions, and minimizing financial obstacle to use of the interventions.

### 1. Reaching the poor: equity of coverage for interventions addressing the burden of diseases of the poor

Communicable diseases and maternal and child health ailments represent the largest part of the burden of diseases for the poorest.<sup>51</sup> The focus of this technical note is on



**Figure 1: Hierarchy of determinants affecting health sector's performance**

quality.<sup>53</sup>

the extent to which the HNP interventions aiming at reducing this burden<sup>52</sup>, actually reach and benefit the poor in a given country. The performance of the sector can be assessed by analyzing the key determinants of coverage for the poor, particularly for the country's core package of key health interventions. Seven key determinants are discussed below: *physical accessibility, availability of essential inputs, service quality, social accountability, utilization of services by the poor, continuity and timing of interventions, and technical*

These determinants can be organized into a simple hierarchical model for assessing the coverage for the poor. The first four stages correspond to “potential” coverage (Accessibility, Availability, Service Quality and Social Accountability) and latter three stages represent actual coverage (Utilization, Continuity and Technical quality). Possible indicators for each of these determinants are discussed below. To the extent possible,

<sup>51</sup> See, e.g. Gwatkin and Guillot (1999)

<sup>52</sup> Such as Micronutrient supplementation, Integrated Management of Child Health, EPI, Family planning, Safe Motherhood, Malaria Prevention and case management, TB case management, HIV prevention and basic care, community based nutrition promotion, etc..

<sup>53</sup> These determinants are inspired by the work of Tanahashi (1978), Knippenberg (1986) and Accorsi (1997). They have been used for the analysis of sectoral performance in countries such as Vietnam, Mongolia, Benin, Guinea, Senegal, Guinea Bissau etc

assessment for each of these factors should include public, NGO, and private services and facilities, in order to obtain a complete overview of the health system.

**TABLE 1 DETERMINANTS OF COVERAGE WITH A CORE PACKAGE OF ACTIVITIES (adapted from Knippenberg 1986 and Miller 1989).**

<b>Stages</b>	<b>Example of indicator for EPI</b>	<b>Example of Inputs</b>
<b>Accessibility</b>	Proportion of mothers of children 12-24 months who live less than 1 hour from a fixed health center with weekly immunization or less than 30 mn from a monthly outreach point	Health Facilities and providers (public, NGO, private); Outreach workers and mobile clinics Transport (public and private), Roads and communications.
<b>Availability</b>	Proportion of mothers of children 12-24 months who have access to an immunization point with continuous availability of vaccines and syringes/needles	Personnel (public, private, NGO) Pharmaceuticals, supplies, , stocks of consumables (public and private sources) Equipment Maintenance (eg, functioning cold chain).
<b>Service quality</b>	Proportion of mothers of children 12-24 months having access to an immunization point where other key services are integrated: growth monitoring, ORT distribution, Vitamin A supplementation	Training, supervision, equipment, staff incentives
<b>Social Accountability</b>	Proportion of mothers of children 12-24 months having access to an immunization point where communities conduct semestrial monitoring of immunization coverage and are involved in actively tracking defaulters	Civil society representation Involvement of users and communities in management, monitoring etc
<b>Utilization (initial contact)</b>	Proportion of children 12-24 months having received at least one shot of vaccine	Outpatient and inpatient contacts; facility deliveries; Management tools.
<b>Continuity (quantitatively sufficient contact (s))</b>	Proportion of children having received the full course of vaccines	Adequacy of record-keeping, outreach, follow-up; Incentives to personnel; knowledge of clients
<b>Technical Quality (Quality Contact)</b>	Proportion of children having received the full course of vaccines with the appropriate technique	Training, supervision, well-defined protocols, availability of drugs and equipment

### 1.1 Physical Accessibility

The capacity of the sector to ensure physical access to essential health interventions for the poor, including community-driven health and nutrition activities.

There are several approaches to measuring accessibility. The first is to measure the *service supply relative to the population served*—e.g. the number of clinics, hospitals (or hospital beds) per 1000 population, or the number of facilities offering a particular intervention or package of interventions per 1000 population. A limitation of this approach is that it does not account for the distribution of services with respect to the poor.<sup>54</sup> The data are more useful if they are broken down by region or district, to compare rural and urban, or poor and less-poor districts. The second is to measure proportion of the population living within a given distance of a particular type of health facility (eg, 8 km or 12 km) or interventions., preferable broken down income level or by poorer regions. Third (related to the second), one can measure the time required for a client to reach a facility or service delivery point (eg, less than one hour). For example, a facility may be nearby, but inaccessible because of a river or other obstacle. Alternatively, if a clinic is near a road and accessible by public transport, the poor may reach it more quickly than one that is closer but accessibly only on foot.

To be meaningful, accessibility indicators need to take into account the physical size of the area served and the size of the population in the area. Accessibility may be a major constraint for the poor in some countries and regions, but relatively minor in others. In addition, the distribution of health facilities (public and non-public) may be inefficient in some areas—for example, inadequate coordination can result in government facilities located within several kilometers of comparable NGO facilities.

#### *Data collection and analysis:*

- A first step is to develop a map that shows the geographical distribution of essential services. The map should specify, if possible, the location of fixed facilities, outreach points, mobile clinics, and possibly outreach workers for public and nongovernmental services, as well as major roads and natural barriers, such as rivers. This could be done manually or electronically using Geographic Information Systems (GIS)<sup>55</sup>. Many countries have developed or are in the process of developing a Health Facility Inventory and Planning map. The key step is to link the health maps with a poverty map, by linking accessibility data to household survey data. One can then see how poor and less poor areas fare in terms of the availability of health services in their geographic area.<sup>56</sup>
- Information from household surveys can be used to calculate the percentage of poor with access to services, and to determine the extent to which low physical access is a major constraint for the poor. The DHS and LSMS, for example, include questions on household assets as well as availability of essential services in the community,

<sup>54</sup> International standards (for example those developed by WHO) or local standards (for example, determined through local operational research) can be used—for example, doctors per thousand population. One problem, however, is that these standards are rarely developed in the context of a realistic budget envelope for the sector. Reaching pre-specific targets input targets should not substitute for careful diagnose of the major constraints facing the sector, and the most efficient way to achieve outcome goals.

<sup>55</sup> GIS systems can be very useful, and allow the linking of a wide variety of information, but require special equipment and trained staff to operate and sustain (retaining computer staff is a particular challenge). An increasingly number of health ministries are using GIS, however, and the actual GIS data entry and analysis could be done on contract with the private sector or an NGO.

<sup>56</sup> Two useful compendia of health service indicators exist, both of which present possible measures of accessibility. These are USAID's (undated) Health and Family Planning Indicators: A Tool for Results Frameworks, and Knowles et al.'s (1997) Measuring Results of Health Sector Reform for System Performance: A Handbook of Indicators.

so it is possible to compile tabulations for accessibility by income or asset levels. Because poverty is unevenly distributed, it is useful to assemble data on availability at the regional as well as national level. These quantitative methods could be complemented by beneficiary surveys or participatory assessment approaches in poor communities, to assess whether physical access is perceived by the poor as a major problem.

### 1.2 Availability of Essential Inputs

The capacity of the sector to ensure continuous availability of essential inputs, particularly at the periphery

HNP facilities may be present and physically accessible in an area, yet essential resources for the intervention (such as staff, drugs, or equipment) may be lacking or frequently unavailable. In poorest countries, shortage of supplies is one of the most critical hurdles that health sectors have to face.<sup>57</sup> Shortages of qualified health staff in remote areas often hampers the provision of health services. Developing indicators of the percent availability of critical inputs by level of service can help assess the extent of the problem. In addition, maps showing the distribution of qualified staff, as well as drug and vaccines availability, could be drawn and linked to poverty maps, to identify whether shortages are rampant in poorer or remote areas.<sup>58</sup>

#### *Data collection and analysis:*

Central health information systems may have data on availability, and distribution of personnel, equipment, drugs, vehicles, and other inputs, although these data are often incomplete or unreliable.<sup>59</sup> Conducting surveys of a sample of facilities can provide more detailed and reliable information on the availability of key inputs, and specific methodologies have been developed to do this (for example, essential drugs surveys). District or provincial officials could also be asked to compile tabulations of the availability of staff and other key inputs in their areas. In addition, qualitative surveys can be used to find out if absence of drugs or staff are seen by the poor to be major problems—and are particular useful to find out if staff absenteeism is a major problem. If drug or staff shortages are identified as significant problems, the more difficult challenges to try to understand why these problems persist. Inadequate funding for inputs may be part of the problem, but is rarely the only reason.

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<sup>57</sup> A study conducted in Cote d'Ivoire (ICCF 1997) showed for example that cotrimoxazole and four other essential drugs were not available in the public health clinics more than half of the time.

<sup>58</sup> Improving the quality and availability of pharmaceuticals and health staffing is difficult, and often requires structural reforms. Future versions of this toolkit will include technical notes on pharmaceuticals and human resources.

<sup>59</sup> Official statistics often provide information on the availability of drugs, medicines, growth monitoring and immunization programs, and so on. Aside from the fact that they are rather crude measures of quality, they also may paint a rosier picture of quality than is warranted. A facility survey in Côte d'Ivoire found a substantial divergence between drugs and medicines that were *supposed* to be available, according to government records, and those that were *actually* available, according to the facility survey. Despite the crudeness of the quality measure, the facility survey revealed some worrying gaps between poor rural areas and better-off urban areas in the proportions of facilities with immunization and growth monitoring programs.

### 1.3 *Organizational quality and consumer responsiveness*

The extent to which public, private, and/or NGO services are responsive to consumer concerns, and are delivered in a way that encourages appropriate utilization relevant interventions.

A number of factors influence the “user friendliness” of services, including the attitude of health staff, hours of operation, space, cleanliness and comfort of the waiting area and of the wards, waiting time, gender of the service provider, modes of payment, efficiency of referral, etc. These factors in turn strongly affect the perception of quality by consumers, and are important determinants of whether or not services are used—particularly since consumers are often not good judges of clinical quality. Organizational quality is likely to vary among public, private, and NGO providers; by geographic location (are they worse in poor areas?); and possibly by the type and level of service (clinics versus district hospitals; or antenatal care versus STI treatment). It can be measured objectively (eg, average waiting times, time spent with providers), or qualitatively, by asking the poor how they perceive the quality of different types of services.

#### *Data collection and analysis:*

Measuring organizational quality mostly relies on a mix of qualitative and quantitative tools—this type of information is rarely available through routine health information systems.

- Qualitative surveys, focus groups, or exit interviews with the poor can be illuminating. Discussions should be conducted separately with men and women, and possibly adolescents and adults, since their concerns may differ. In many countries, for example, women report being treated rudely or even abusively during delivery at government clinics; or women or adolescents avoid seeking care for STIs at public providers because of privacy concerns. Exit interviews provide useful information on provider/client interactions, but does not reach those not using services—community-based approaches are therefore also useful.
- In-site assessment of various aspects of service organization can be compared to the problems identified by the users. In this case, the challenge is to compare consumer perceptions with service-based “objective” measurements (average waiting times; observations of provider behavior; cleanliness of facilities). Information collected could be used to build scales and indexes of quality, to allow comparisons of different types of services.

The family planning field in particular has developed Situation Analysis methodologies, which combine various methodologies to collect information from a sample of facilities and communities on the availability of inputs; provider behavior; process quality indicators; and perception of community members.<sup>60</sup> The Situation Analysis approach can be adapted for other services.

### 1.4 *Social Accountability*

The health system or particular health services are more likely to be responsive to the poor if the poor are able to exert influence or “voice” over health systems and providers. Health staff in government clinics are often unresponsive to the poor because they are not directly accountable to them. There are several potential avenues for participation and “voice” by the poor. The first is the direct management of local clinical services, through community health centers or revolving drug funds, as experienced in the

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<sup>60</sup> The Population Council or United Nations Family Planning Association have further information on these tools.

Bamako Initiative. Second, the poor could be engaged in monitoring the performance of facilities or providers, either through representation on a district or facility board or committee, through an effective grievance system; or through intermediaries, such local political leaders, religious organizations, or NGOs. Some countries have also developed and publicized "Patients' Bill of Rights," to strengthen consumers' ability to demand quality care. A third is mobilizing communities for health promotion activities, whether malaria prevention or improved water supply. Even when formal mechanisms for participation exist, however, health providers often still dominate by virtue of greater education and expertise, and women or certain ethnic groups may be excluded from decision making.

*Data collection and analysis:*

The first step is to assess the extent to which mechanisms exist for the poor to exert influence on services overall and for specific interventions. The next is to determine whether those mechanisms actually influence the quality of services provided to the poor. One approach is to assess the extent of participation by level and type of service according to the following categories: information sharing; consultation; collaboration and shared decision making.<sup>61</sup> In the case of private services, the poor exert influence through their roles as consumers, although the effect of that influence may vary. Assessment of voice and participation in health services could be incorporated into an overall participatory assessment for the PRSP (see the chapter on Participation). Information would need to be collected through visits to a sample of communities and facilities, possibly by an NGO in collaboration with communities. Relevant questions might include: What percentage of health facilities have some sort of community committee or board associated with them? Do these meet regularly? Are they perceived as representative of the community and of the poor in particular, or are they dominated by local elites? Is there any measurable difference between the consumer-responsiveness of services between services for which the poor have some representation compared to those where they do not? What factors explain the differences? Are local political leaders responsive to the poor, and is the quality of health services an issue of concern for local leaders? If the poor have relatively little influence, are there existing traditional or modern institutional structures that could be built upon to improve their voice?

*1.5 Utilization of health interventions:*

The percentage of the population, and the poor in particular, making use of a particular health service in a given year.

For the purposes of this section, "utilization" is defined as the first use of a service by a consumer in a given year ("continuity" or subsequent contacts are discussed below). Utilization is therefore in a key indicator of the extent to which the poor come contact with the health system -- public, private, and NGO.

*Data collection and analysis:* Utilization can be measured either in terms of the total volume of services provided, or as the percentage of a given target population using the intervention (for example, the percentage of children receiving a measles vaccination; or the percentage of women with at least one antenatal care visit).

- Health information systems usually collect data on the use of services, including outpatient visits; in patients; vaccination; antenatal care; etc.. These data are usually under reported, however, so usually cannot be used to calculate population-based

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<sup>61</sup> See the *World Bank Participation Source Book* (1996) for a detailed discussion of the participatory process.



utilization. But they can still provide useful trend analysis if compiled in a time series, or if making comparisons among regions or facilities.

- Household surveys can provide better information on the percentage of a target population making use of a particular service (e.g., percentage facility deliveries, percentage of adults with an STI seeking care), as well as whether a public or nongovernmental service was used, and possibly reasons for non use of services.
- The quantity of services produced in specific area could be linked through a poverty map to the income level of the population of the area. Such a mapping of equity of output production is currently conducted routinely in Mozambique.<sup>62</sup>

Examining trends and patterns of utilization, particularly with respect to the poor, can help identify constraints to system functioning. Reasons for non use of interventions services cannot be assessed only from the services side alone, however (see section 3). Yet when utilization is low despite good access and availability of services, analysts will need to explore survey data regarding the reasons why interventions are not used. This is likely to include aspects such as price, perceived quality, cultural acceptability, or household factors such as education.

#### *1.6 Timing and Continuity*

Whether consumers receive the requisite number of contacts for services that require repeated interventions; and whether time-sensitive services are delivered in a timely manner.

In the health sector, some interventions must be repeated at regular intervals in order to be effective (such as ANC visits or BCG vaccinations). For others, the timing is critical, such as for emergency obstetric care. Too often are interventions provided partially, at the wrong time, or too late. Yet service continuity is a significant organization challenge and an important indicator of system effectiveness, because it requires the ability to track and follow up with consumers.

#### *Data collection and analysis :*

Much of the analysis is similar as above, but focusing on interventions that require repeated contacts. Continuity can be assessed by looking at drop-out rates and other indicators of follow-up, preferably using a combination of facility data and household surveys. Key interventions/indicators include BCG coverage or children with a full course of immunization; the number and timing of antenatal visits (percentage beginning in the first trimester, and percentage with more than three visits), and compliance with tuberculosis treatment.

#### *1.7 Technical Quality*

The likelihood that the service, if used, will lead to improved health outcomes.

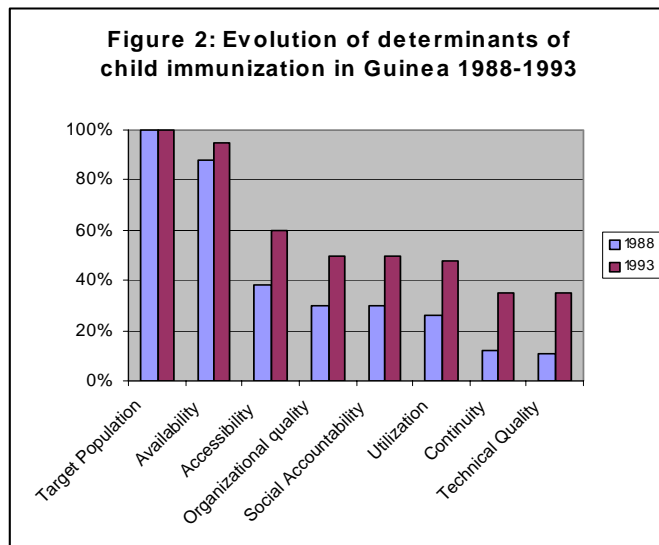
The capacity of the sector to provide the appropriate combination of technology and empathy at a given level of utilization is key to ensure that interventions are translated into effective outcomes.<sup>63</sup> Technical quality depends on effective provider training and

<sup>62</sup> In Mozambique an index is constructed using services based information on proportion of proportion of children immunized, proportion of women using antenatal services and number of inpatient and outpatient visits.

<sup>63</sup> Striking examples of the impact of low quality of services are found in maternal health. Utilization of ANC is quite high throughout Africa, yet the relevance and quality/efficacy of services is so low that despite high demand, maternal outcomes improve very little. In the Gambia, a TBA program led to major increase in utilization of obstetric services, yet with no impact on outcomes, since women reaching hospital services died there for lack of blood, material and surgeon. In the same way for TB, we know that people seek health care when they have chronic cough and fever. Yet services often

supervision; the existence of appropriate treatment protocols; adequacy of critical inputs; as well as factors such as provider workload. Technical quality may be poor even when consumers express satisfaction with the services -- this can be a particular problem in a poorly regulated private sector. If a substantial portion of the poor go to the private sector for priority interventions, it would be useful to assess the technical quality of private as well as public services.

*Data collection and analysis:* Assessing the capacity of the sector to produce outputs of good technical quality usually requires direct observation of provider behavior, to compare existing practices against standard protocols. In addition, there a number of indicators that are particularly sensitive to technical quality. These include perinatal mortality rates, malaria case fatality rates, TB cure rates, and maternal mortality. Follow-up studies of maternal or perinatal deaths can help shed light on whether shortcomings in clinical quality contributed. More sophisticated instruments for assessing quality via facility surveys are available for some HNP outcomes. WHO's Topical List of Priority Indicators for IMCI at Health-Facility Level provides a useful instrument for assessing quality in the management of childhood illness. (Technical Note 4 gives details of this instrument.). Surveys undertaken using this instrument suggest some huge variations in quality across countries (see Box 3). These data could be linked to a poverty map or to a household survey to get a sense of how the poor fare in the country compared to the better-off.



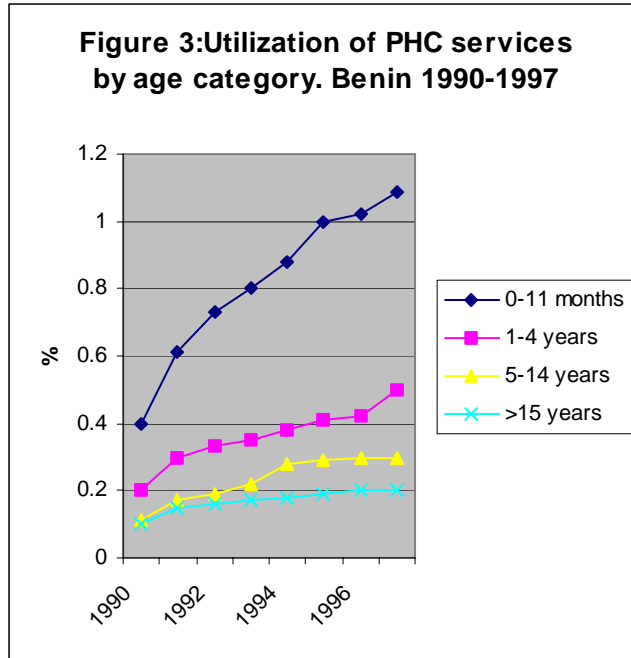
Some countries have attempted to orient the reform of their health sector towards better serving the poor using such a matrix of health sector performance as a starting point to define priority actions. Over the last 10 years, countries such as Benin, Guinea and Mali where government spend less than 5 US\$ per capita per year on health focussed their reform efforts at addressing the key performance hurdles of the health sector that were hampering the provision of a core package of essential promotive, preventive

and curative interventions to the poor: low physical access to health interventions (communities upgrading health posts, health staff and community workers conducting outreach and community activities), peripheral shortages of essential drugs and vaccines (procurement procedures, central medical stores, essential drugs low-cost procurement and establishment of community managed drug revolving funds ), poor organization (poor attitude of health staff, under-counter payments, short opening hours, long waiting time etc.), the low use of services ( improving perceived quality and keeping prices at low level especially for priority interventions, cross-subsidizing

fail to recognize the diagnosis and to prescribe and follow-up on appropriate treatments. Information on quality is hard to come by.

<sup>64</sup> In Burundi, only 3% of children with diarrhea were correctly assessed and only 13% correctly re-hydrated. In Vietnam, by contrast, the figures were 78% and 67% respectively. In Indonesia, only 2% of pneumonia cases were managed correctly and only 4% of caretakers were correctly advised. The figures for China were 73% and 75% respectively. Source: WHO (1998).

essential services by less essential services, developing exemption mechanisms and involving communities in management and monitoring) continuity and timing issues (e.g: addressing for example the drop-out problem in immunization using community leaders and womens' groups), technical quality (eg: standards of care, supervision and performance based payment) and social accountability (e.g: civil society's authority on services).



In these poor countries additional resources for health were generated through user fees, yet local retention of funds, reinvestment of revenue in quality improvements and local management of exemptions has limited the impact on equity. Health committees are involved in resources management, monitoring of services and support to community based activities. In Guinea, management committees regularly participate in the monitoring of the local performance of the sector (see figure 2) In Mali Reform districts have on average a higher immunization coverage, higher use of MCH services and higher utilization of basic curative care than non Reform districts. In Benin and

Guinea reforms in health systems in 1989 provided the basis for the positive trend in most health indicators: immunization coverage went up in these two countries from 32 % and 5 % in 1988 to 81% and 53% in 1998 respectively. In Benin, utilization of essential services by children under one raised dramatically as well as use of maternal service. (see figure 3) PHC services are used in a larger extent by the poor than by the rich. Infant mortality dropped from 114 per thousand in 1987 to 88 per thousand in 1996, at a level of economic growth comparable to neighboring countries. Regular reviews of sector's performance in improving its performance regarding key determinants of health outcomes were seen as a key element of "a virtuous cycle of implementation" in this country .

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## 2 Channeling Resources to the Poor

This section examines the extent to which the health sector is: i) allocating resources to the most critical public-good and cost-effective interventions, which will likely affect the poor (*allocative efficiency*) ii) channeling resources to interventions that reach the poor at least as much as or in a greater extend than the rich (*equity of expenditures*)<sup>65</sup> iii) ensuring financial access to services and protect the poor from the impoverishing effect of catastrophic illnesses (*affordability*).

### 2.1 Allocative efficiency

The *core allocative* issue in looking at health and poverty is this question of whether public health activities, and among them public health activities that benefit the poor, are adequately funded by the government. A typical method to evaluate whether the health sector is allocation efficient would be to look at whether public goods and low-cost high-impact interventions are favored as compared to not public good, high-cost low-impact interventions<sup>66</sup>. Another issue often less addressed include the channeling of private expenditures towards more cost-effective interventions, an issue particularly critical in poorest countries where private expenditures are at equivalent level or higher than public expenditures. Walle and Nead (1995) also found that health sector expenditures vary in their incidence according to the level of services but primary centers dispensing preventive and curative care are usually more pro-poor than relative to hospital services

*Methodology to assess allocative efficiency include review of public expenditures and comparison of amounts spent on public health activities as compared to other less essential services. Typically, spending on primary care is compared to spending on hospital and particularly tertiary care and spending on preventive services is compared to spending on curative services. The same categorization can be used for private expenditures. Another key issue is the relative allocation for recurrent versus capital spending. A common finding in many countries has been that new capital investments in health facilities even though the capacity to bear the recurrent expenditures linked to this investment is inadequate.*

Reference: "Evaluating Public spending: a framework for Public Expenditures Reviews" World Bank discussion paper 1996

### 2.2 Equity of Expenditures

Whether public health and other health interventions in general actually benefit the poorest groups is another issue. Richer groups may benefit from services in a larger extent than the poor. The poor may not benefit from the public services as much as they need. Richer groups may use in a larger extent subsidized services for catastrophic illnesses etc.

*Various studies have attempted to estimate the benefit incidence of public spending and spending for different health programs in developing countries. Assessing equity of*

<sup>65</sup> Vertical equity (equality of equals): equal expenditures between poor and rich

Horizontal equity (inequity of un-equals) : expenditures responding to needs; if poor have more health needs horizontal equity implies that the poor receive more than the rich.

<sup>66</sup> This approach, advocated in the World Bank's 1993 World Development Report *Investing in Health*, would point towards an emphasis in public spending decisions on low-cost high-impact interventions and services, and against high-cost low-impact interventions.

*expenditures requires tracing the beneficiaries of the spending and classifying these beneficiaries by socio-economic groups. These studies rely on household budget surveys to identify access to different types of facilities by households of different income groups and then to attribute benefits or subsidies to each group.*

Reference: Benefit incidence analysis in developing countries Policy Research working papers ; no. WPS 1015. Public economics Selden et al.1992

### 2.3 Affordability

A separate issue is whether households are pushed into poverty or further into poverty through out-of-pocket payments. Evidence comparing households' living standards pre and post out-of-pocket payments suggests unsurprisingly that for households without insurance coverage out-of-pocket payments are a bigger financial shock, and that out-of-pocket payments can be large enough to make the difference between having a standard of living above an absolute poverty line and below.<sup>67</sup> This is particularly true for catastrophic illnesses that often precipitate economically vulnerable families into poverty.

*Assessing financial access and affordability requires comparing current prices of services with capacity to pay of households and pattern of utilization at a given price. This requires relating data on utilization of services and household expenditures with services price data. Government statistics can in principle provide data on the prices charged for different services, and the categories for which fee waivers exist if any. In practice, facility surveys provide more accurate information on both, not least because fee waiver programs can—and are often intended to be—subject to local interpretation and implementation. Analysis of price elasticity of demand for different types of services are done by comparing utilization overtime following price changes, accounting for other variables. More simple analyses can be conducted in comparing the average price for services to the average monthly or yearly income of a poor household.. This latter can be particularly useful for assessing the potential dis-savings impact of catastrophic illnesses. Willingness to pay can also be estimated from contingent valuation studies. These studies directly ask individuals through surveys the value they would place to particular types of services.*

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<sup>67</sup> Smith [34] contains longitudinal evidence from the US. Cross-section evidence from China is contained in Wagstaff et al. [14], which also looks at the poverty angle.

## Technical Note 5B: An example of how to approach public expenditure analysis in the health sector

The figure at the end of this Technical Note illustrates a process for undertaking a public expenditure analysis in health. The steps are outlined below:

### Step 1: The Budget (Allocative Efficiency)

- (i.) In health, unlike in the other social sectors, there are some pure (or nearly pure) public goods that virtually require public financing if they are to be provided adequately. These include public health and preventive services, whose benefits reach the public at large as opposed to being captured by specific individuals (e.g. vector control, communicable disease surveillance and management, immunizations, and so on). Slack in these programs will not be taken up by private expenditures. These are perhaps the highest priority expenditures.
- (ii.) The next level of importance is basic clinical and acute services. This infrastructure or something like it is required to provide public health services and to provide one outlet for subsidized health services for the poor (which could also be funded through NGOs or private providers, but typically is not). An efficient clinic system, characterized by a reasonable level of quality and patient satisfaction, is the next priority.
- (iii.) Finally, higher level, costly hospital services provide a measure of safety to the population in case of catastrophe. In a resource-constrained environment of a low-income country, as much of the cost of these services as possible needs to be shifted off the government budget or it will crowd out (i.) and (ii.).

The benefit structure of (i.) and (ii.) tend to be pro-poor, and the impact can be enhanced through geographical targeting. Level (iii.) is almost always skewed toward the rich, more so the poorer is the country. There are no exact standards for the proportion of funding that should go to these different components of expenditure. However, it is important on grounds of both allocative efficiency and equity to properly fund public health services and basic acute services as a matter of priority. The residual category should be hospital services, and that spending could be replaced by direct cash subsidies to the poor and others who are unable to adequately insure themselves. Unfortunately in public spending, hospitals tend to be the primary category of expenditure and the two more important categories, public health and basic clinical services, tend to be the residual categories.

### Step 2: Analysis of Efficiency:

The discussion in the text covered technical and input efficiency. The question addressed here is how do you translate this into a Public Expenditure Review?

- (i.) How high are administrative costs? Usually these will be much less than 10 percent of the health budget. Red flags should start emerging, however, at 5%.
- (ii.) Often there is a disaster on the input side. In the 1980s in Peru, salaries consumed nearly 100% of expenditures at the clinic level, so the system delivered virtually nothing more than the warm bodies of nurses and doctors. These warm bodies were able to produce little without other inputs. In the high-salary, expensive U.S. health system that nevertheless must be able to deliver

services to attract patients in a competitive market, salary expenditures at the hospital level tend to hover around 50-55% of costs. In developing countries, a ratio this low is rare. To reduce the fraction paid in salaries will require either that budgets rise for non-salary costs or that salary costs are cut. Either way, to change the input mix into something that can deliver services will require radical reallocations in most developing country expenditure patterns.

Salaries are not the only input. At the facility level, it is important to assess the efficiency of use of capital and equipment. Have past investment policies produced a system with many underused and poorly maintained buildings? Does equipment stand idle or in need of repair? The solution requires not only increases in repair and maintenance costs but often also requires difficult decisions about closing down facilities, seeking management by nongovernmental entities of facilities the government cannot maintain, and changes in incentives that lead to excess capacity and inadequate maintenance.

- (iii.) Utilization is an important but rarely addressed issue in the efficiency of government services, which is often addressed solely on the input side. Are there any patients? If a doctor or nurse is seeing 4-5 patients a day, or if a hospital is at 30% bed occupancy, the government is literally throwing away a share of its health budget. OECD physicians see 30-40 patients a day and hospitals should have at least an 80% bed occupancy level on average.

A problem in poor countries without adequate transportation infrastructure (requiring a more extensive system to provide access) is that the worst utilization statistics will be in rural areas. Utilization analysis can help by making the efficiency cost versus equity-enhancing tradeoffs of such decisions explicit. Even in the most tightly constrained system, there are often large potential efficiency gains that can be made through alternative contracting mechanisms, and tough decisions to close non-performing assets so that a smaller system can be allowed to function properly.

- (iv.) It is usually most instructive to mount a small study within the country to compare the performance of different types of service providers (government, private, charitable) working within the same environment. This can be done at reasonably fast and inexpensively.

### *Analysis of Equity*

Incidence analysis of government expenditures in health, however, crude, is absolutely essential. At a minimum, the different levels of service need to be analyzed (public health, primary, secondary, and tertiary).

### *Intergovernmental (and Facility) Fiscal and Managerial Relations*

Even in *unitary political systems*, a fully centralized governmental health system makes little sense. Gains can be made by moving money and decisions to the local political and facility levels, as long as this is accompanied by proper performance measures to hold the lower levels accountable. Many health risks and conditions vary substantially by geographical location, and delivery of personal health services depends heavily on individual contacts. These characteristics create benefits from local decision-making. In

*federal* systems, which level of government funds what, where the tax base lies, and the role the federal level plays in providing equalization grants among subnational governments are key topics that strongly affect health policy.

### Steps 3 and 4: Simulations and Longer Term Issues

At the very least, any proposed changes in budget allocations should come with simulations showing the expected impact (on efficiency and distribution of subsidies), a monitoring framework for assessing the impact in practice, and alternatives for decision-makers. Apart from illustrating the proposal, these simulations help those preparing an expenditure proposal to refine and simplify them.





### **Technical Note 5C: A spreadsheet-based converter of an administrative budget in health or education into a program budget, and an application to Tanzania**

These files will have to be made available through the website. They are currently available on Lotus Notes database: HNP\Poverty\ReductionStrategy.nsf on WBLN1023/Facility/WorldBank.

### **Technical Note 5D: A spreadsheet-based analysis tool for linking burden of disease, cost-effectiveness of interventions, and public spending**

These files will have to be made available through the website. They are currently available on Lotus Notes database: HNP\Poverty\ReductionStrategy.nsf on WBLN1023/Facility/WorldBank.

### **Technical Note 5E: Public Expenditure on Health – Who Benefits?**

#### **Introduction**

Public subsidies for health services are often seen as a means of improving HNP outcomes of the poor. A fairly undemanding criterion for a successful subsidy program would be that without it the distribution of health service utilization across income groups would be more unequal—more skewed towards the better-off. In this sense, public subsidies for health have probably been a success. In Indonesia, for example, private expenditure on health care is far more unequally distributed across income groups than income, which in turn is more unequally distributed across income groups than public health subsidies [1]. A more demanding criterion would be that public subsidies for health services ought to be targeted on those who need health services most—presumably the poor. In this sense, public subsidies for health services in developing countries have, for the most part, been a failure. One of the most spectacular failures in this respect is Guinea, in which the poorest quintile received only 4% of public subsidies for health, whilst the richest quintile received 48% [2]. This Note sets out the techniques for assessing the incidence of benefits—benefit-incidence analysis (BIA)—and reports some key results for the PRSPs.

#### **Benefit Incidence Analysis**

The aim of a BIA is to assess how different income groups compare in terms of the amount of health subsidy they receive. The exercise involves coupling household survey data (containing information on utilization of different types of service by people with different incomes) with aggregate data on subsidies for different types of service.

Table 1 shows the average number of primary care visits per income quintile in Vietnam. These data are obtained from a household survey, and households have been ranked by income into income quintiles. The column headed “subsidy per visit” indicates the

amount of subsidy associated with each primary care visit. This is computed from Table 2. The total net subsidy is simply the total gross subsidy less any cost recovery. The net subsidy per unit is simply the total net subsidy divided by the number of units of utilization. The total subsidy per quintile is then the average number of units of utilization multiplied by the per unit net subsidy. The same exercise can be undertaken for other sub-sectors—see Table 3. The total subsidy for each quintile is then simply the sum of subsidies for each of the sub-sectors. In the case of Vietnam, the total health sector subsidy is decidedly pro-rich. This obviously reflects the pro-rich distribution of subsidies to the hospital sector and the relative importance of the hospital sector in the total subsidy—in Vietnam, over 60% of the total subsidy went to the hospital sector. The fact that primary care in Vietnam is not so unequally distributed matters little at the end of the day, since both outpatient and inpatient care utilization is so heavily skewed towards the better-off.

**Table 1: Distribution of Subsidies for Primary Care in Vietnam (Source: [3].)**

Quintile	Visits	Subsidy per visit	Total subsidy	% subsidy
Poorest	2,264	2.51	5,678	19%
2	3,396	2.51	8,517	29%
3	2,830	2.51	7,098	24%
4	2,264	2.51	5,678	19%
Richest	1,132	2.51	2,839	10%
Average	2,377	2.51	5,962	
Total	11,887		29,810	

**Table 2: Subsidies and Cost Recovery for Primary Care in Vietnam (Source: [3].)**

Item	Amount
Health costs (m dong)	31,810
Fees (cost recovery) (m dong)	2,000
Net subsidy (m dong)	29,810
Visits (m)	11.887
Subsidy per visit (dong)	2.51

**Table 3: Distribution of Health Sector Subsidies in Vietnam (Source: [3].)**

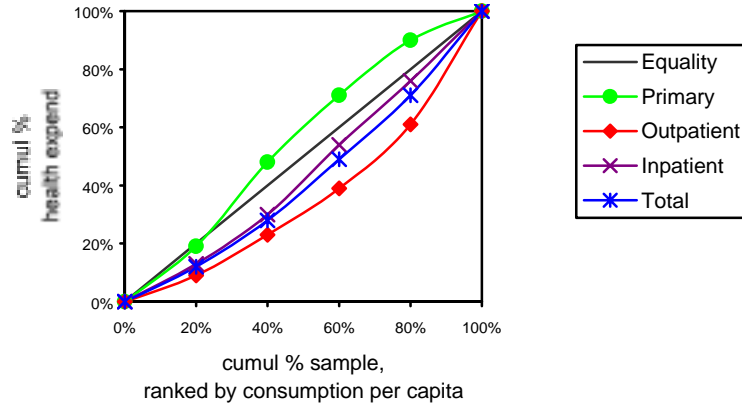
Quintile	Primary	Outpatient	Inpatient	Total	Share
1	5,678	46,844	105,045	157,567	12%
2	8,517	69,557	134,855	212,929	16%
3	7,098	78,074	198,733	283,905	21%
4	5,678	113,562	177,440	296,680	22%
5	2,839	195,894	193,055	391,789	29%
Average	5,962	100,786	161,826	268,574	100%
Share	2.2%	37.5%	60.3%	100.0%	

### Concentration Curves and Indices

The results can be plotted using concentration curves as in Figure 1 [4]. These plot, along the horizontal axis, the cumulative percent of the sample (ranked by income), against, along the vertical axis, the cumulative percent of subsidy received. If subsidies are distributed equally across income groups, the concentration curve will coincide with the 45<sup>o</sup> line, or line of equality. In the case of primary care subsidies, the concentration curve starts out below the 45<sup>o</sup> line and then rises above it, reflecting the fact that the bottom quintile gets less than 20% of the subsidy but the second and third get more than 20%. All the other subsidy concentration curves lie below the 45<sup>o</sup> line reflecting the pro-rich bias in utilization in Vietnam.

A natural measure of the degree to which the subsidy is biased towards or against the poor is the concentration index, defined as twice the area between the concentration curve and the 45<sup>o</sup> line, and positive when the concentration curve is, on balance, below the 45<sup>o</sup> line and negative when it is, on balance, above [5]. A negative concentration index thus indicates a pro-poor subsidy, whilst a positive index indicates a pro-rich subsidy.

**Figure 1: Concentration Curves for Subsidies in Vietnam**



**Results for different countries**

Figure 2 shows concentration indices for subsidies to the health sector for various countries. In most countries, subsidies benefit the better-off most. The exceptions are mostly Latin American countries and the results for some of these countries are partial in the sense they capture only part of the subsidy program (the Ministry of Health Subsidies, and not the Social Security subsidies). Exceptions are Honduras and Peru, where all health subsidies are included—these have either a mildly pro-poor pattern or a pro-rich pattern.

**Figure 2: Concentration Indices for Health Subsidies (Source: indices computed from results summarized in [6].)**

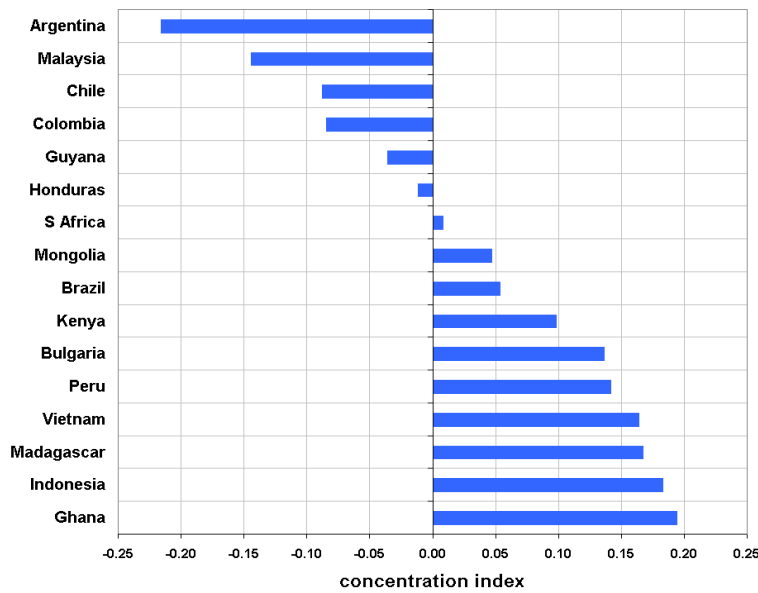


Figure 3 shows the different bias in hospital and primary care subsidies. In almost all countries, the pro-rich bias is less in the primary care sector than it is the hospital sector;

indeed, in four countries, hospital subsidies are pro-rich whilst primary care subsidies are pro-poor.

**Figure 3: Concentration indices for health subsidies**  
(Source: indices computed from results summarized in [6].)

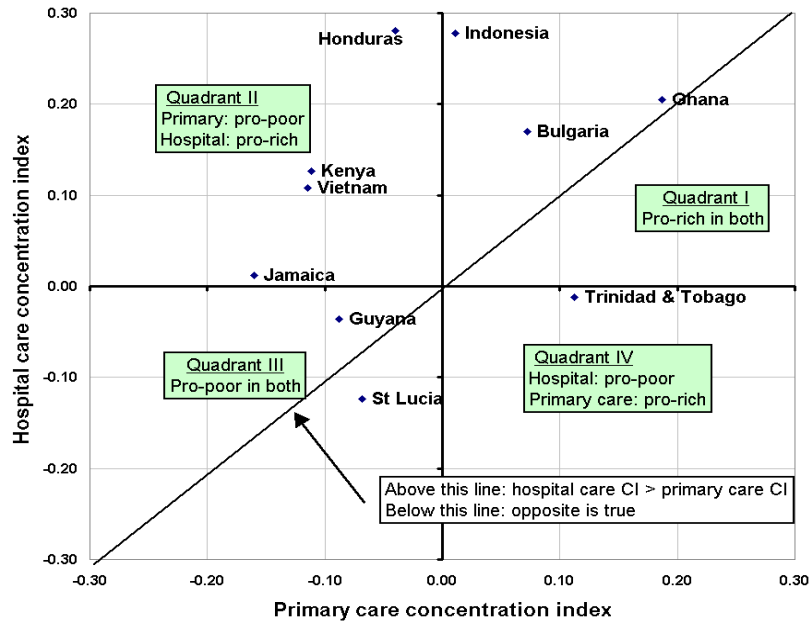
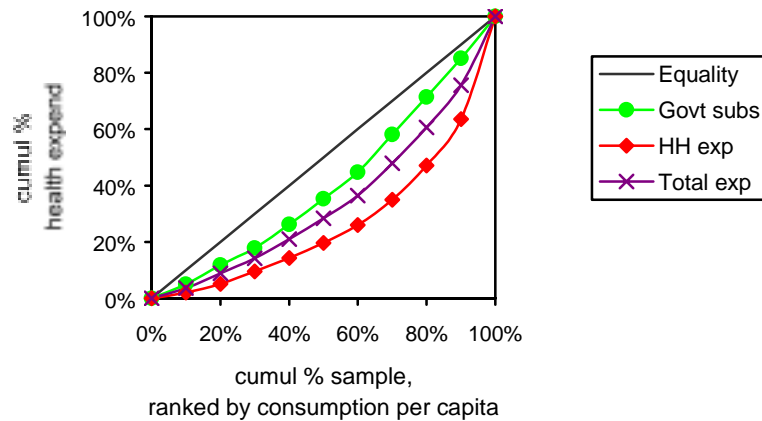


Figure 4 compares the distribution of health sector subsidies with the distributions of income and private health spending in Indonesia. The latter is more unequal than the distribution of income, implying that the income elasticity of demand for (private) care in Indonesia is less than one [7]. If, in the absence of a subsidy program, the income-elasticity of demand for health care generally would also have been less than one, the implication is that health care would have been distributed less equally than health subsidies are under the existing subsidy program. Subsidies may not be well targeted on the poor, but they it is likely that health care is more equally distributed under the imperfect subsidy program than it would have been without it.

**Figure 4: Concentration curves for health subsidies, Indonesia**  
(Source: based on results in [1].)



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## Technical Note 6.1: Behavior Change Communications, Households and Service Providers

### Households:

At the heart of achieving better health, nutrition, and population outcomes are the actions of individuals and households. This is true for interactions between individuals and the providers of HNP services and for the daily actions such as feeding and caring for children, using contraception to achieved desired family size, maintaining a hygienic and safe environment in the residence, and managing physical activities. For public policy to have a sustainable effect in improving HNP outcomes, it is important then to recognize the importance of household actions, measure when and where these actions are not taken by families, understand the reasons for the lack of appropriate action, and devise strategies to address the reasons.

In many cases, the main reason for lack of action is lack of knowledge. For example, in the case of immunization of children in rural India, the lack of knowledge about immunization (both the importance of immunization and availability) played a major role in poor families not seeking the service from providers. In such cases, public policy should recognize the importance of addressing the demand for the service, identify the population groups that are not acting, understand the type of knowledge needed, explore best ways to mediate this knowledge to the target populations, and ensure that such efforts are financed.

It is also important to note that household actions related to HNP outcomes are affected by various factors such as household economic and social standing, urban/rural location, physical and social access, and maternal education. Promoting healthy behavior requires cross-sectoral collaboration between government departments and partners in development. Steps for implementing Behavior Change Communication interventions include:

1. Prepare a situation analysis to identify vulnerable population groups and knowledge gaps. Collect data, both quantitative and qualitative, from coverage and household surveys, and focus group discussions with beneficiaries and other stakeholders to identify the knowledge, attitudes and practices of the different population groups
2. Analyze data and carry out consultations with stakeholders to identify barriers, understand reasons for poor health and explaining why the gaps exists between different population groups.
3. Assess reach and impact of media and other existing Information, Education and Communication (IEC) programs carried out by government as well as partners such as NGOs. Multiple communication channels may be required, with varying intensity for different population groups. Media alone will not be adequate for reaching some groups. Interpersonal communication needs to be utilized more effectively. Explore the role of peers and other “influencers” in bringing about behavior change.
4. Build partnerships with NGOs, community groups, professional organizations, youth networks, news and entertainment media.

5. Build health promotion and BCC as an integral part of health programs. Ensure adequate budget allocations.
6. Develop cross-sectoral linkages with other key sectors such as education and water and sanitation.

### **Service Providers**

The recent Voices of the Poor exercise conducted for the Year 2000 World Development Report, confirms that vulnerable groups are often excluded from health services and suffer from poor interaction with health providers. Studies confirm the positive role that health providers can play in transmitting important information and motivating healthy behaviour. BCC needs to equally target health providers to make health services accessible responsive and sensitive to the needs of clients. On the provider side, steps include:

1. Emphasize high priority to health education in national health policy, programs and services and ensure adequate budget allocation.
2. Build political will and advocacy for health education cross-sectorally, in national plans and policies.
3. Identify health messages and opportunities for health services to communicate messages and promote healthy behavior.
4. Include counseling and health education as an important component of health services.
5. Train health providers in interpersonal communication and using contacts with clients to promote healthy behavior. Sensitize health providers to gender issues and needs of vulnerable groups including accountability.



## Technical Note 6.2: HNP Benchmarking, Monitoring and Evaluation

This section of the toolkit will discuss the related areas of benchmarking, monitoring, and evaluation. Although they overlap, for the purposes of the PRSP we can define them as follows:

- *Benchmarking* involves comparisons among countries, or among regions or subgroups within a country, or over time with respect to key HNP outcome or system performance indicators, particularly in relation to the poor. These can be cross-sectional (level) or dynamic (rates of change). International benchmarking allows comparisons among similar countries; cross-sectional benchmarking identifies gaps within a country between rich and poor, among regions, or ethnic groups. Comparing changes over time (dynamic) helps identify areas of progress and difficulty. Benchmarks can provide guidance for further analysis and priority interventions, and can also help generate interest among political leaders for action.
- *Monitoring* involves the periodic assessment of key intermediate indicators that are causally linked to desired outcomes. As such, they must be measurable with some degree of reliability on at least an annual basis. Benchmarking can overlap with monitoring, and the terms are sometimes used interchangeably. Benchmarking should include key outcome indicators, however, which may not be monitorable on an annual basis.<sup>68</sup>
- *Evaluation* seeks to understand the factors behind the success or shortcomings of a given intervention(s). Although often taking place *ex post*, evaluation studies may be very useful prior to an intervention (for example, to understand why vaccination rates for the poor remain low).

The process for developing background analysis (including benchmarking), monitoring indicators, and evaluation priorities should proceed in several steps. First, Bank staff, government and partners should collect and analyze relevant qualitative and quantitative information—both available from international sources and from the country—in order to establish priorities and targets for improving HNP outcomes for the poor. Relevant quantitative information can be used to establish benchmarks. Second, the borrower's monitoring and evaluation capacity should be assessed, including the quality, timeliness, and use of data and evaluative information for decision-making. Third, the results of this assessment should guide both the indicators chosen and the approaches used for program monitoring. Fourth, government and partners should strengthen or establish appropriate systems to ensure that key monitoring indicators are collected and analyzed in time for annual reviews. Fifth, partners should establish a medium-term strategy to strengthen evaluation capacity (public and private) and the results-orientation of health-oriented activities.

### 1. Collect and analyze baseline Information and Data

The first step is to collect, analyze, and present existing information regarding the health status of the poor and its determinants. Some data are likely to be already available within the World Bank and other international data sources, but additional effort will be

<sup>68</sup> For example, maternal mortality rates, or child mortality, are usually not appropriate monitoring indicators, because they are difficult to measure reliably (particularly MMR) and usually change slowly.

necessary to gather and analyze information at the country level. Possible activities include:

- *International Data:* A starting place for benchmarking is international comparisons among similar countries (either by region, GDP/cap., or even health expenditure levels), beginning with the DAC indicators that relate to HNP. The background note by Wagstaff (cite) describes some of the information that is available centrally at the World Bank. These include the HNP poverty data sheets that have been compiled for 40+ countries, and HNP Stats.<sup>69</sup> The poverty data sheets allow comparisons among the rich and poor within countries, and between similar countries.
- *National household surveys* (such as DHS or LSMS, or possibly a national census) are conducted every several years in many developing countries. These can be used to: (i) provide a break-down of key health, nutrition, and population outcome indicators according to income quintiles<sup>70</sup>; (ii) provide time-trend comparisons for key indicators;<sup>71</sup> (iii) perform demographic or econometric analysis regarding the determinants of key outcome indicators.<sup>72</sup>
- *Other household surveys and analyses* in particular regions, or on specific issues, may have been carried out by government, donors, or other researchers. These may or may not be formally published, and could be collected and reviewed during a mission, by local staff or partners. Those that might provide insight into the health-seeking behavior of the poor, the impact of cost-recovery and other expenses, and other health, nutrition, and fertility practices would be particularly useful.
- *Health information systems* collect routine data on facility attendance, and various other indicators (eg. immunizations, deliveries, specific diseases). These data are rarely complete at the national level, and vary considerably in quality among countries. Even if incomplete, however, they may be able to provide some indication of trends. Facility data is unlikely to provide information on disease burden or facility use by income, but can provide trends in facility use and possibly treatment of major diseases that effect the poor. If central data are unreliable, health service data can be directly collected at district or facility level, but this is time consuming. The main problem with HIS data is that it provides no information on who is not coming for health services and why. This requires household surveys or qualitative assessments.
- *Financial information:* If national health accounts have already been prepared, these should prove useful. Public expenditure reviews by the Bank may also provide good background data, but may need to be updated. A comprehensive picture of health spending (including benefit incidence analysis) requires household expenditure data, but additional analysis of government budgets can provide important insights.
- *Situation analysis surveys* of health or population facilities, or reviews of specific

<sup>69</sup> The poverty data sheets are based on large household surveys (DHS or LSMS), and provide breakdowns by income quintiles. HNP Stats is drawn from various sources, but much of the data are estimates or extrapolations, so need to be used with caution.

<sup>70</sup> This analysis for the DAC indicators has already been done for the Poverty Data Sheets. Depending on data availability and resources, further analysis could be done by qualified demographers or econometricians using a methodology developed by the World Bank/WHO. Selected additional indicators could be added depending on data availability and borrower interest.

<sup>71</sup> DHS and LSMS are usually of good quality and reasonably comparable; census data vary considerably in quality. Regardless, because of data uncertainties and high standard errors associated with outcome indicators (such as mortality), time trend comparisons should be made with caution. If data seem anomalous, it may be worth checking with technical specialists (e.g., Macro International for DHS) to make sure the issue isn't with the survey itself.

<sup>72</sup> The determinants for fertility, child mortality have been thoroughly studied using DHS and other household data (with socio-economic status and maternal education almost always most important, with varying findings regarding the influence of HNP services. Repeating such analytic work may not be necessary on a country-by-country basis.

health programs (often donor-sponsored), can be an important source of information on service quality, and may also incorporate client and provider interview. Situation analysis have typically been conducted for family planning services, but may be available for other services. These probably don't give poor/nonpoor breakdowns.

- *Research studies* into specific diseases that affect the poor, or operational studies regarding the effectiveness of key services are sometimes available, either published (journals) or unpublished. In some countries, researchers or NGOs have done studies on the effect of cost recovery on the poor (of varying quality).
- *Beneficiary assessments*, ethnographic studies, or other qualitative assessments are increasingly carried out by the Bank or other partners, many of which focus on health and the poor. These may have been done by other donors, NGOs, academic institutions, or government ministries.
- Other possible sources of information include nutrition or food security monitoring systems (such as the Famine Early Warning System in southern Africa).

## **2. Assess the borrower's HNP monitoring and evaluation capacity**

Such a review need not be exhaustive, but is important.<sup>73</sup> Often donors (including the Bank) select indicators without first assessing whether and how they will be collected, their reliability, and whether the information will influence real decisions (including budgets). Several types of systems are relevant. Quantitative systems include national household surveys (usually several years apart), vital registration systems (often weak in low-income countries), health information systems, and nutrition or food security monitoring. The information from these systems is often produced after significant delays, often with large quantities of data presented with little analysis. If facilities and districts merely collect the information for headquarters (either because they do not have the training or discretion to use the information to target and prioritize local programs), it is unlikely to be reliable, and less likely to be used. Qualitative or beneficiary assessments can be carried out by universities, NGOs, consulting firms or market research organizations, and sometimes government units. The skill and experience of these organizations is likely to vary, as is the range of qualitative techniques used (for example, universities often provide more training in questionnaire surveys than focus groups or participatory role appraisal). The capacity assessment should examine the quality and use of information at various levels of the system, and identifying key constraints -- including incentives -- that influence capacity. This assessment should inform the choice of indicators, as well as the design of the monitoring and evaluation framework -- including the relative roles of routine information systems, and external qualitative for quantitative evaluations. Financial monitoring systems are important, including budgeting systems and internal and external audits, and should be reviewed by an appropriate specialist.

## **3. Select Monitoring Indicators**

Choosing monitoring indicators can be a contentious process. The indicators must be relatively few in number, reliably measurable, and focus on issues that significantly affect the poor but are also amenable to public action. Various stakeholders—including donors—are likely to push for indicators that address their specific needs. The choice of monitoring indicators should be based on the analysis of which factors are most likely

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<sup>73</sup> The Bank's Operations Evaluation Department (OED) has developed a methodology for evaluation capacity assessment, which could be applied either to central or sectoral ministries (K. McKay, OED 1998).

to bring about improvements in HNP outcomes for the poor -- but with an eye toward measurability, availability, and the likelihood it will influence decisions. Monitoring indicators need to be carefully thought through, since they will need to be assessed on an annual basis, and will likely be the basis for which PRSP implementation is judged. The Bank and donors will need to strike a balance between information or indicators that they wish to have for accountability purposes, and information that is most relevant and useful by those implementing programs. Yet if local officials do not consider the information relevant or realistic, they may not collect it.<sup>74</sup> When selecting indicators, it is important to think carefully about what decisions the indicator will influence. If it is unlikely to influence in the specific decisions, it probably should not be used. Once indicators are agreed upon, government and partners need to decide how the data will be collected and analyzed—e.g., through routine HIS and monitoring systems, or through rapid appraisal techniques (which may be both quantitative and qualitative)—and who is responsible for analysis and interpretation. Finally, it should be emphasized that the indicators used for the PRSP will only be a subset of those that are likely to be collected and used by health officials at different levels of the system. Although the PRSP process could help strengthen and focus existing systems, it should try to be compatible and not exclusive of local systems.

#### 4. Developing an evaluative framework

Like the instruments on the dashboard of a car, monitoring indicators can only indicate whether progress toward a specific objective is being achieved or not. They are not intended to provide a full diagnosis. It is therefore important to also develop an evaluation strategy. The two main objectives should be (i) to assess the extent to which the selected interventions are in fact having an impact on the poor; (ii) to better understand the factors influencing HNP outcomes for the poor, and how these can be addressed more cost-effectively. Because of data limitations, the initial analysis will inevitably yield several key areas where knowledge and understanding are weak. The most important of these could be made priorities for specific evaluative activities. Key questions are *what* issues to examine, *which* methodologies to use (qualitative vs. quantitative, etc.), and *who* should carry out the evaluation (government vs. non-government, local and/or international). The assessment of evaluation capacity should provide insights into the approach used (e.g., pilot interventions, process evaluations, focus group assessment, etc).

#### 5. Establishing a plan for evaluation capacity development

A variety of the studies by OED and others have found that the Bank and other donors have not invested sufficient time and attention into building evaluation capacity in borrower countries. The goal is not just to strengthen information systems, but to strengthen the links between M&E and policy and program decisions. A key weakness in many countries is the lack of incentives for using information, because budgets are determined on an input basis. The PRSP process could therefore be an important instrument to strengthen attention to, and incentives for, the collection and use of HNP information, and strengthen results orientation in general. Building capacity and shifting public sector incentives is likely to be a medium-to long-term process, but needs to be

<sup>74</sup> District officials in Ghana resist having to collect information on the percentage of households with impregnated bednets, since it is not part of their routine data collection.

<sup>75</sup> One approach to limiting the number of indicators is to have either technical specialists and/or key stakeholders assess a relevance score for each proposed indicator (see PHR, Knowles).

initiated early if it is to bear fruit. Although training and equipment may be needed to some extent, learning-by-doing is crucial.

### **Technical Note 6.3: Lessons from World Bank experience OED evaluation of HNP sector work**

The World Bank's Operations Evaluation Department (OED) recently completed a major evaluation of the Bank's work in the HNP sector. Although the findings focus on the Bank, many are relevant for borrower governments (which implement Bank-financed projects) and for other donor partners. The major findings are summarized below, together with further discussion of three key areas: HNP outcomes for the poor; institutional assessment; and monitoring and evaluation.

#### **Main Findings**

The World Bank has made important contributions to strengthening health, nutrition, and population policies and services worldwide. Through its financing, the Bank has helped expand geographical access to basic health services, sponsored valuable training for service providers, and provided other important inputs to basic government health services. The Bank also has used its lending and non-lending services to promote dialogue and policy change on a variety of key issues, including family planning, health financing, and nutrition strategies. Clients appreciate the Bank's broad strategic perspective on the sector, and the Bank has taken a growing role in donor coordination. Despite an initial focus on government health services, the Bank is increasingly focusing on issues of private and NGO service delivery, insurance, and regulation. In recent years, the Bank also has placed greater emphasis on client ownership and beneficiary assessments in project design and supervision.

Several broad concerns emerge from the OED study regarding the Bank's performance to date, many of which are relevant to the PRSP process. First, the Bank has been more successful in expanding health service delivery systems than in improving service quality and efficiency, or promoting institutional change. Although the quality of institutional analysis has improved in recent years, the Bank is often better at specifying *what* practices need to change *than* how to change them or *why* change is difficult. Paradoxically, Bank project designs are usually more complex—with a greater number of components and organizational units—in countries with weak institutional capacity. The Bank is adopting increasingly sophisticated approaches to promoting sector reform, but the institutional problems being addressed are increasingly difficult. Yet experience shows that realistic objectives, together with increased attention to *why's* and *how's*, increases the likelihood of achieving institutional objectives.

Second, during project implementation, the Bank typically focuses on providing inputs rather than on clearly defining and monitoring progress toward HNP development objectives. Because of weak incentives and undeveloped systems for monitoring and evaluation (M&E) within both the Bank and borrower governments, there is little evidence regarding the impact of Bank investments on system performance or health outcomes. The Bank therefore has not used its lending portfolio to systematically collect evidence on what works, what does not, and why. Methodological challenges can make it difficult to conclusively link project interventions with changes in HNP outcomes or system performance. But experience shows that effective M&E design—including the

selection of a limited number of appropriate indicators and attention to responsibilities and capacity for data collection and analysis—enhances the focus on results and increases the likelihood of achieving development impact.

Third, with some notable exceptions, the Bank has not placed sufficient emphasis on addressing determinants of health that lie outside the medical care system, including behavioral change and cross-sectoral interventions. The incentives and mechanisms for intersectoral approaches currently are weak both within the Bank and in borrower governments, so priorities for intersectoral work must be carefully chosen. The Bank has a fundamental responsibility, however, to more effectively link its macroeconomic dialogue with sector dialogue, particularly on issues of health financing, health workforce, and civil service reform.

Finally, improving health system performance and HNP outcomes for the poor requires strategic and flexible approaches to support the development of the intellectual consensus and broad-based coalitions necessary for change, which requires an emphasis on learning and knowledge transfer. System reform is difficult and time-consuming, and stakeholders outside ministries of health can determine whether reforms succeed or fail. This highlights the importance of realism in project objectives, strong country presence, stakeholder analysis, and a more strategic use of the Bank's convening role. While incremental approaches are not always more appropriate, the Bank may have been excessive in its encouragement of "big bang" reforms.

### **Linking Inputs to HNP Outcomes for the Poor.**

Although usually focusing on poor regions or diseases that most affect the poor, the Bank has been weaker in analyzing the factors leading to ill health and selecting interventions that are likely to achieve the maximum impact on the overall disease burden for the poor. Project design documents typically describe the disease burden, list project activities, and then assert that significant improvements in health outcomes will result. Design documents, however, seldom present a coherent analysis of *how* project interventions will translate into improved health outcomes for the poor. Consequently, the Bank is usually over-optimistic in its projections of health impact and, more important, often does not consider whether alternative approaches would yield a greater impact on the disease burden for the poor. All four country studies and the portfolio review found that Bank investments and policy advice tend to focus on the medical care system, while greater aggregate health improvements may be achieved through health education and behavior change initiatives, or intersectoral interventions such as water and sanitation (Lerer et al. 1998). Intersectoral interventions can be difficult to implement, however, and therefore must be chosen carefully and allocated adequate time for supervision. Prevention is not always more cost-effective than curative approaches, however, as demonstrated by the Amazon Basin Malaria Control project.

### **Institutional Analysis**

The Bank and partners confront a number of inherently difficult institutional challenges in the HNP sector, many of which have not been adequately resolved in developed countries. In addition, ministries of health are often administratively weak, particularly in areas such as financial management. Yet these difficulties alone do not explain the Bank's disappointing performance on institutional development. Other factors are at work:

### Lessons from Successful Institutional Development

Of the 73 HNP projects completed between FY91 and FY98, only 13 were rated by OED as having substantially achieved their institutional objectives. These projects shared several characteristics:

- *Consistent commitment to achieving institutional objectives*, including the promotion of consensus among stakeholders regarding priorities and approaches, and if necessary, developing strategies to anticipate and soften resistance.
- *Project designs based on a solid analysis of the underlying constraints* to improved performance—through some combination of sector work, evaluation of previous experience, and dialogue with key stakeholders. Designers then developed realistic strategies to address these constraints, including attention to the proper sequencing of interventions.
- *Flexible project implementation*, with regular reviews of progress toward institutional objectives, and proactive attention to problems by Bank staff and borrowers. About half the projects that substantially achieved institutional goals were significantly modified during implementation.
- *A governance and macroeconomic context that was supportive of institutional and organizational development*. If not, the above factors were particularly important.

- *The Bank often does not adequately assess borrower capacity to implement planned project activities*. This was the factor most commonly cited in ICRs as contributing to poor project performance, including 69 percent of projects rated unsatisfactory.
- *In seeking to promote institutional change and build borrower capacity, the Bank often does not adequately analyze the constraints underlying current performance*. Although institutional analysis has improved since the mid-1990s, it remains weak, particularly in relation to the much more daunting systemic reforms the Bank is now promoting.
- *Weak analysis contributes to a lack of clarity in the articulation of institutional development objectives*, including whether the instruments chosen are the best to bring about change. Bank projects have traditionally addressed capacity constraints through the provision of training and additional resources, although a growing number of projects (particularly in LAC and ECA) are focusing on improving incentives or regulations.
- *The absence, until recently, of appropriate indicators for institutional goals* has contributed to the tendency to assert that “capacity was built” because training or technical assistance were provided, reducing the focus on the ultimate objectives.

Although some institutional issues require sophisticated analysis, the criteria used by OED merely asked whether project designers appeared to have thought through relevant institutional issues (Stout et al. 1997). This suggests that institutional development performance in HNP could improved through increased commitment to achieving institutional goals, developing standards and tools for institutional analysis, and training staff and partners in their use (X-reference??).

### Monitoring and Evaluation of HNP Outcomes

Most HNP project designs identify key performance indicators, and intentions for M&E have improved in recent years. But the vast majority of project completion reports state that the data required were not collected or analyzed, at least in a manner that allowed assessment of impact. The gap between M&E intentions and implementation is

a particular problem for HNP. Project designs often give primary responsibility for implementing M&E to the borrower, but do not adequately consider how data will be collected or analyzed, the incentives and capacity of borrowers to do so, or the appropriate balance between the use of internal monitoring systems and external (including rapid assessment) evaluations. A number of projects have sought to improve borrower capacity—some successfully. But the Bank has tended to place excessive emphasis on providing equipment and training, and underestimated the time required to agree upon indicators among various bureaucratic stakeholders, clarify roles and responsibilities for data collection and analysis, and strengthen incentives for using evaluative information and decision-making. The challenges of M&E are more difficult for system reform than for targeted interventions, but lessons from HNP projects with successful M&E are broadly applicable.

### Technical Note 6.4: Political and Stakeholder Analysis

The political implications of a policy – including the support or opposition of key stakeholder groups -- often influence whether or not it is adopted. Health sector reforms can be particularly difficult because of the wide variety of stakeholder organizations and interests, and because health care is often seen quite literally as a matter of life and death. While improving health outcomes for the poor may appear to be non-controversial, any decisions regarding the allocation—and particularly reallocation—of health resources inevitably provoke support from some groups and opposition from others. Merely making pro-poor policy changes a condition or target in a PRSP program in no way guarantees that they will be adopted or effectively implemented. Getting pro-poor health policies adopted therefore requires developing a coalition among stakeholders (domestic and international) sufficient to implement and sustain change. This in turn depends on the skill and commitment of supporters, the nature of the proposed changes, and the overall country context.

#### Stakeholder Analysis

Ideally, stakeholder analysis should inform the design of policies, not wait until implementation. When designing or preparing to implement a new policy, policymakers and PRSP authors should consider four factors<sup>76</sup>:

- **Players:** These are the individuals and groups who are affected in the policy change process, and who might become involved in influencing its outcome. Possible players may include government ministries (health, finance, agriculture, education, local government); professional groups (doctors, nurses, etc.); business organizations; religious organizations; various users of health services (urban and rural, poor and middle-class); and international organizations (IMF, World Bank, WHO, donors). Each of these groups, in turn, may have competing interests within them.
- **Power:** The relative power of each stakeholder group. Poor people are often poorly organized and politically weak, particularly in rural areas, while doctors are usually more influential (although they are not always well organized). The way power and influence is exercised varies depending on the political system and traditions of the country.

<sup>76</sup> This framework is based on a paper by Michael Reich, "Political Analysis and Political Strategies," in the Flagship Course on Health Reform handbook, World Bank Institute.



- **Position:** The position taken by each stakeholder group, including whether they support or oppose the policy, and the intensity of their commitment. Note that if multiple reforms are involved, a given group may support some policies and oppose others. This can serve as a basis for negotiation.
- **Perception:** The public perception and definition of the problem and the proposed policy can affect which groups become mobilized, and their positions on the policy. For the PRSP in particular, the extent to which proposed changes are perceived to have been imposed from the outside (e.g. by the World Bank or donors), versus being home-grown and appealing to shared national values, may influence the ultimate outcome.

Experienced policymakers and political leaders consider these factors almost instinctively, but public health specialists and economists sometimes focus excessively on the technical aspects. By considering the "four P's" above for each proposed policy change and the entire proposed package, policymakers and PRSP authors can refine their proposals and develop a stakeholder strategy to increase the likelihood of successful implementation. The most common and avoidable mistake is simply not consulting adequately with key stakeholders. Additional stakeholder strategies are likely to include mobilizing supporters of the policies; conducting public information campaigns; identifying influential "champions"; or negotiating with opponents. Formal toolkits for stakeholder analysis in the health sector are available for those wishing to do more in depth analysis<sup>77</sup>. Whatever approach used, successful implementation depends on the *political skill* of advocates, not just *political will*.

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<sup>77</sup> See Michael Reich and David Cooper. 1996. "PolicyMaker: Computer-Assisted Political Analysis, Software, and Manual," Version 2.2. Brookline, MA: PoliMap.

## Technical Note 6.5: Criteria for evaluating public spending options

### Prioritization: When The Rubber Hits The Road

#### *I. There is Never Enough*

The Shiroishi family had a good year financially. With the Japanese economy picking up, both parents are earning more money than they had over the last few years and their investments in stocks have stabilized after the East Asian crisis. They sit in the living room of their Tokyo apartment to discuss the prospects for the coming year. The mother, and financial planner in the family, calculates their combined income and from that deducts their obligations like rent, car payments, schools, utilities, and other living expenses. What she is left with, and what economists call disposable income, is a bundle of cash that the family can save or spend as they wish. Since this is the first time in many years that the family has not been concerned about spending habits, the demands on the disposable income totaled three times more than what was available.

The father, fast approaching 50 years of age, has had his eye on the 2001 model Mazda Miata. He has had to drive the family's second car for eight years now and it has become a money pit constantly needing repair. His status among his colleagues at work, and therefore his future income stream, is somehow linked to the type of car he drives.

The mother has a different plan in mind for the disposable income. With an eye on the rising costs of education in Japan and three young kids eventually needing financial help to go to college, she is concerned that the family equity stake has suffered from the Asia financial crises and needs re-investment. She has identified two high-performing stock funds and feels that by investing the disposable income now, the financial security of the family will be reestablished.

The kids have something completely different in mind. You see there is a new entertainment complex called Joy-o-polis that all the cool kids are going to every day. Their life would be "sooo much better if they could get season passes". The passes are a "great deal too" because with one you do not have to pay for any of the rides and all the food is heavily subsidized so they can save lots of money.

Clearly the Shiroishi family has a prioritization problem. They cannot afford all three packages and there will have to be compromises, winners and losers. The final decision will depend on a number of factors, including:

1. The value the family puts on long-term returns versus short-term satisfaction;
2. Coalition building skills of the different family members; and
3. The different color options available for the Mazda Miata.

A prioritization exercise in developing government budgets for the health sector in any country shares some important elements with the experience of the Shiroishi family

budget exercise. Both activities are driven by the same problem, which also happens to be the main drive behind microeconomic theory. Namely, that we have **limited resources and unlimited wants**.

Other similarities include:

1. A highly political process in which the final result depends primarily on the relative position of power of the various advocates.
2. The process will most probably produce clear winners and losers due to the difficulties in developing win-win solutions (there is simply not enough money). A standard result will have to be some form of rationing.
3. The failure to reach a final consensus leads to a situation where those controlling the resources make the final decisions.

So how should policy makers, facing a resource constraint, make decisions about what to finance? As this paper will show, there are no simple or purely technical answers. Moreover, the different disciplines and interests involved in the health sector bring into prioritization sometimes contradictory objectives, tools and decision criteria. The next section will briefly describe the different tools used in measuring *wants* and resources and some the difficulties with defining and measuring *wants*. Section III explores the disciplines and advocates that are typically involved in a prioritization exercise for population and reproductive health services. A list of prioritization criteria is described in section IV followed by the different approaches to prioritization. The last section describes ways to identify the winners and losers of prioritization exercises.

## *II. Measuring Limited Resources and Unlimited Wants*

There are a number of different ways of defining and measuring resources and needs. Evidence-based analysis provides a quantitative picture of the *wants* or *needs* faced by a sector or a country. We can use burden of disease analysis to capture the most urgent needs from an epidemiological perspective. But are there perspectives other than epidemiology? And do the choices implicit in the design of a single measure (such as Disability-Adjusted Life years--DALYs) bias the results in a systematic way? If the answer to either question is yes, and it is for both, then relying solely on a burden of disease approach to defining *wants* and *needs* may not be the best approach.

In addition to the documented shortcomings of DALYs and other burden of disease measures (see box 1), there are questions regarding the *needs* approach followed by the public health community and represented by the burden of disease and cost-effectiveness. At issue is the observed gap between the *need* for services as highlighted by burden of disease studies and the *use* of available services seen through service statistics and household and utilization surveys. By only looking at *need*, we may be discounting the factors that create the sizable gap between *need* and *use*. Moreover, the mere fact that a service is needed does not automatically imply that it should be publicly financed.

### Box 1: Technical limitations of the DALY's approach

**1. DALYs imposes social preferences that have not been validated.**

Social preferences such as the discount rate, the age weight, and the disability scale are arbitrary and do not necessarily reflect the preferences of those affected by the results of the analysis. Setting priorities through mortality information by cause imposes an equivalent set of values that do not necessarily reflect the beneficiaries values. Another criticism is that each country or small population should be formally consulted about the preferences involved in DALYs.

**2. The age weights do not reflect common preferences among health specialists, economists, and general population.** It is difficult to reach a preferred ratio for the DALY formula. For example, the DALY values a 50 year old at about 25% of a 25 year old, and at the other extreme of the age span, one year of life at birth is set equal to one year at the age of 25 years old. No matter what changes are introduced to the formula it is impossible to come to one set ratio.

**3. The exclusion of late fetal deaths is unjustifiable.**

DALYs exclude deaths of fetuses that are born 1000 grams or pass the 28 week gestation period. If a woman has access to proper care, the fetus can be saved. If the burden of disease assessment ignores late fetal deaths, the cost effectiveness of treating obstetric complications is nil.

**4. The application of the DALY at the national level over-estimates the years of life lost.**

There are two arguments that support the use of the life table model with high life expectancy. (1) The model should have at least as many years of life expectancy at birth as the known national population with the highest life expectancy. (2) In order to avoid fostering health inequalities between countries, the standard model for low mortality countries should be applied to high mortality countries. These arguments do not apply to national level. It is also unrealistic to use a life table with 80 years for countries with life expectancy at 60 years or lower.

**5. DALYs violate the rule of rescue.**

DALYs are insensitive to the density of years lost by individuals. For example, 30 years lost for one individual equals one year lost by 30 individuals.

**6. The disability weight ignores the handicap attached to some permanent disabilities in different societies**

The same disability has different effects on the lives of individuals in different countries. The health loss of these individuals is greater than is estimated by the DALYs.

**7. The disability due to cognitive development is not fully captured.** The DALY fails to capture the disability and many of the causes of cognitive developmental impairments such as protein energy malnutrition.

**8. DALYs are not applicable in countries with scarce health information.**

Source: Bobadilla 1996 (World Bank)

The measurement of the “resources” part of the equation is not straight forward either. There are many dimensions to costing and various ways of measuring costs (Box 2 highlights some of the complexities and choices). Moreover, the way costs are represented can influence decision making. Two examples can illustrate this point. Cost information can be presented with a programmatic point of view, capturing only costs to the providers, or from a societal point of view, capturing better the demand for services and the likelihood of use. If a societal point of view is used, the cost to families and communities becomes part of the prioritization discussions and may lead to service delivery patterns closely aligned with community demand. Ignoring community cost considerations, as all of us almost always do, risks financing services that are rarely used by the targeted groups.

The second example relates to looking at averages versus marginal costs. Costing may look at marginal costs, capturing only additional costs, or look at average costs,

capturing the unit cost of a services. For many years, the insurance industry in the United States looked at the average cost for hospital stays when recommending lengths of stay from a cost point of view. What was clearly missed was that the costs per day depended on the intensity of medical procedures, the use of monitoring equipment, and associated labor costs. One day in the intensive care unit after extensive medical procedures can cost the hospital a lot more than the last days in hospital stay, typically for observation, when the main costs are hotel services. Furthermore, the unit (average) cost approach for prioritization may present a theoretical picture of costs but ignores practical considerations of the existing service delivery system and staffing and may lead to inefficiency in resource allocation.

## Box 2: Costing Dimensions

- 1. Are Objectives Clearly Identified?** Choices to be considered in the next 12 questions depend primarily on the basic objective of the costing exercise because *“if you do not know where you are going, any road will take you there.”*
- 2. Does the Methodology Selected Match the Objectives?** Do not let fancy names for techniques and methodologies fool you, most costing is simple algebra. However, it is important to match the level of accuracy of data needs with the objective of the exercise.
- 3. Does the Methodology Account for Overhead or Administrative Costs?** A simpler way of asking this question is “are we counting everything?”
- 4. Does the Methodology Correctly Apportion Joint Costs?** It is important to make sure costing activities use common sense and practical ways of dividing up shared cost items among the different interventions.
- 5. Does the Methodology Distinguish Between Fixed and Variable Costs?** The main issue here is that some cost items grow with added applications of interventions while others, like rent, are not a function of the number of patients or clients. The budgetary implications are important if utilization rates are expected to change.
- 6. Does the Methodology Distinguish Between Recurrent and Capital Costs?** Building a hospital is considerably different from buying consumables in that the hospital can be used for along period of time while consumables lose their value after use.
- 7. Does the Methodology Produce Average or Marginal Costs?** (see example 2 in text)
- 8. Which Point of View Does the Methodology Take?** (see example 1 in text)
- 9. Does the Methodology Address Opportunity Cost or Just Accounting Costs?** It is rare that a costing study actually accounts for opportunity costs of using resources.
- 10. Does the Costing Exercise Take Advantage of All Available Data Sources?** One would hope so, but you will be surprised how lazy economists are on this one.
- 11. Are the Data Collection Methods Used Appropriately?** At the heart of costing is data collection. It is critical to ensure that the data is reliable and representative.
- 12. Are All the Assumptions Clearly Stated and Realistic?** Economists are masters at making assumptions when data is not available but typically fail to document them.
- 13. Were Sensitivity Analysis Undertaken to Test Assumptions?** Listing the assumptions is not enough. It is important to see if the assumptions make a big difference. Source: Yazbeck, A “An Idiot’s Guide to Costing in the Health Sector,” 2001.

### *III. Me, Me, Me, Me*

The budgetary quandary of the Shiroishi family was driven by three distinct advocacy groups represented by the father, the mother, and the kids. Each advocacy group had an objective and, if they acted like a typical family, a strategy supported by sometimes dubious and always highly selective facts. Is this typical of a prioritization exercise for a package of health services? Maybe not the dubious facts, but all prioritization exercises have sets of topic-specific advocates who have clear objectives and strategically use selected facts to advance their objectives. In a typical country, the list of advocates, and their objectives and tools, may include:

#### Economists (also known as bean counters and practitioners of the dismal science)

**Objective:** In pursuit of prioritization, economists are driven by a singular obsession with clearly defining the role of the state versus the roles of markets and the private sector. They will on occasion agree to include equity as an objective but their primary interest is efficiency and optimal production and utilization of goods and services.

**Tools:** The best tool available to economists in a prioritization exercise is that nobody understands them. They employ three phrases to constantly baffle other advocates and spend a considerable amount of everybody's time trying to explain them. They are: (i) "public goods"; (ii) "externalities"; and (iii) "risk-pooling". To economists, government intervention should be justified, government financing should be highly selective, and government provision should be the last resort.

#### Epidemiologists/Public Health Specialists (Also known as doom and gloom)

**Objectives:** In pursuit of prioritization, epidemiologists focus entirely on their own definitions of "science" and "evidence" using sweeping assumptions that even an economist would be uncomfortable generalizing from. Their objective is to target resources on the sources of disease burden. Public financing for targeted interventions is usually their answer.

**Tools:** Every presentation by an epidemiologist starts with a chart showing an ever increasing measure of human suffering. "Scientific" tools used by epidemiologists include sophisticated measures of the burden of disease and universal measures of cost-effectiveness of a variety of interventions. They are proud of the fact that they can use an economic evaluation tool such as cost-effectiveness to beat the economists over the head.

#### Politicians/Administrators/Implementers (also known as the clients or ribbon-cutters)

**Objectives:** In pursuit of prioritization, implementers are driven by a strong sense of political reality. Cognizant of the fact that change (perceived or real) is associated with political as well as technical risks and can be seen as a confirmation of their past failures, they will do their best to maintain the current system. They are allergic to the term "Reform" (the R word). They do not see private sector providers as the friends that the economists think they are.

Tools: Who needs tools when the implementers are the owners of any intervention. But in case the ownership argument does not work, they claim to be the true voice of the real client, the population.

Health Services Providers (Also known as trade unions or the front lines)

Objectives: Employment, employment, employment, and career development. Resource allocation exercises, such as prioritization, offer both opportunities and risks. They are no fans of “Reforms” because they know that it is simply a code word for firing people.

Tools: The most visible tool available to this group is the threat of walkouts or strikes. They know, however, that the population is not typically supportive of such actions. The most effective tool available to this group is their political connection to ruling and/or opposition parties.

Equity Advocates (also know as the politically correct)

Objectives: To take every opportunity to address historical imbalances in health and family welfare outcomes and access for the poor and to seek gender balance to health outcomes and access. Their favorite word is “empowerment.” Their ability to frame the inequity issue is as sharp as their proposed solutions are vague.

Tools: Pro-poor advocates use the empirical fact of inequity in every health sector in the world. They use quantitative tools such as benefit-incidence analysis or outcome-incidence analysis (also known as poverty fact sheets) to point to the problems, and qualitative tools such focus group work to point to possible answers. Gender equity advocates use the same tools as the pro-poor group but have the added advantage of being the only group able to talk about gender issues without sounding sexist.

Lenders and Donors (also known as development partners or moneybags)

Objectives: Understanding the true objectives of this group requires a stand-alone three week course. They tend to be obsessed with the word “Reform” and get nightmares about a group of people they call “Management.” This group can be easily identified in a prioritization meeting, they are the worst dressed and are driven around in the newest sports utility vehicles.

Tools: Money. With it, they hire as many economists and epidemiologists as needed to torture the empirical facts.

*IV. Prioritization Criteria*

Left to their own devices, each of the advocacy groups identified in the previous section would prioritize using criteria derived from their objectives. When all the advocates are involved in prioritization the criteria multiply in number. A first step, then, in a prioritization exercise is simply listing and defining the selection criteria. For any given country, the list could include (in no particular order of priority):

- *Equity considerations.* Equity is many things to many people so getting a clear definition is essential. Looking first at groupings, equity could involve income categorization, gender, age groups, tribal groups, social classes, or regional clusters. Turning to measures, equity can be of health and family welfare outcomes, access to goods and services, or financial burden. Clearly, from this innocent-looking single criterion, we can construct an almost infinite number of definitions or dimensions. Advocates for equity will assign higher value to services or goods that would more likely benefit the group they are advocating for.
- *Burden of disease (BOD).* Whether measured in DALYs, QALYs, or YLLs<sup>78</sup>, the burden of disease uses a common currency (for the lack of a better term) to present a comparable set of burden numbers to a list of health and family welfare conditions. If done well, a rare occurrence, the numbers can be presented by order of burden and by population subgroup in order to provide useful advocacy information for the different groups. For BOD to be useful in prioritization, the analysis should be country specific, use recent data, and be based on a well functioning and representative set of information systems. If any of these conditions are not met (and they never are), BOD will be attacked as misrepresenting the true burden by those that cannot use the numbers for advocacy.
- *Cost-effectiveness.* Made popular by the defense industry when it was used to find the cheapest ways to kill the largest number of people, cost-effectiveness is now used by health specialists to maximize the positive health outcomes with the limited available resources. While it is basically an economic evaluation tool, public health specialists, much more so than economists, swear by it as a primary prioritization tool. Purists, like myself, bemoan the fact that what is now called cost-effectiveness is actually cost-utility, a first cousin of real cost-effectiveness, since the measure of effectiveness used (QALY or DALY) assumes preferences. Another cousin, cost-benefit, has been shunned by the public health community for shamelessly assigning monetary value to human life (something personal injury lawyers do every day).
- *Public Goods*<sup>79</sup>. The single most confusing concept ever put forward by economists and a cornerstone for public finance economics. The distinction between public and private goods is based on two characteristics of a good or service that affect the market's ability to provide a socially optimal quantity. These characteristics are (i) if the good or service can be consumed by a number of individual or households at the same time (non-rival) and (ii) the ability to prevent people from consuming it (non-exclusionary). The overwhelming majority of health and family welfare services are not considered public goods by economists who argue that they are private goods. Public health specialists, on the other hand, who define their jobs as safeguarding the public health, find it difficult to accept this definition. Economists argue that pure public goods should receive more public attention (and probably more public resources) than private goods.

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<sup>78</sup> Disability-Adjusted Life years, Quality-Adjusted Life years, and Year of Life Lost.

<sup>79</sup> The naming of the concept (public goods) has generated countless, and mostly useless, debates between economists and public health professionals. Had economists named it something different, such as "easily shared goods," much time would have been saved.



- *Externalities*<sup>80</sup>. The second most confusing concept ever put forward by economists and another cornerstone for public finance economics. It relates to the fact that for some goods and services, cost and/or benefits to society are different than those to the producers and consumers directly involved in the exchange. Economists admit that while a number of health services are private in nature, they produce benefits to society beyond the direct benefits to the consumers. Because of that difference and without government action, markets will most likely under-produce the good or service with a strong positive benefit externality. Economists argue that if externalities are large, public attention may be required, and in some cases public financing or even public provision is justified.
- *Risk Pooling*. Economists not only use concepts that most non-economists do not understand, they also use terms that most economists do not understand. The basic issue behind the risk-pooling criteria is that some health conditions are rare or catastrophic in nature and therefore too costly for most uninsured individuals to pay out-of-pocket for. Economists have identified some characteristics of health insurance markets (described using wonderful terms such as “moral hazard” and “adverse selection”) that will most likely fail without some element of market interventions. Public intervention, therefore, to create insurance markets is justified on efficiency terms.

And as if the list of criteria is not long enough, many other dimensions should be considered in putting together the package of benefits and have an impact on prioritization :

- *Existing Capacity to Deliver*. When designing a benefits package, it is important to take into account that the capacity of the system (public or private) to deliver the services being considered. Given time and resources, any health system can deliver any set of benefits to all the population. Time and resource constraints, however, are the reason prioritizing is needed in the first place. This makes it important to both be current on the capacity and to take into account the investment costs in expanding or adding new interventions and benefits.
- *Linkages Across Services (Systems Approach)*. A defining characteristic of a package is that many of the benefits provided are delivered at different levels of service delivery. Any package design should then consider both the capacity of all the levels of service delivery as well as the linkages between levels.
- *Budget Rigidities*. Implicit in a prioritization exercise is the fact that changes will be needed in how expenditures are directed. The operational and practical implication of possible changes in directions is that the budget may have to be changed in ways that are not always politically feasible. The two most difficult issues here are changes in staffing and cutting services that may have constituencies within the powerful upper middle class and service providers (politically powerful professional groups).

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<sup>80</sup> As if this is not confusing enough, the international health community recently coined a new phrase that completely mixes up externalities with public goods; the badly named “international public goods”. In essence, they selected things with large social and cross border externalities, such as communicable diseases, and called them international public goods even though they are private in nature.

- *Transition Costs.* Developing a package of services or benefits may involve changing focus and orientation of the service delivery or financing mechanisms. Transitional costs associated with this change can be large and need to be factored into the prioritization process.

#### V. Prioritization Approaches

Now that we have discussed the need to prioritize (unlimited needs and limited resources), ways to measure needs and resources, the main actors in the prioritization exercise, and the criteria they use, we only need to define the rules of the game.<sup>81</sup> What makes prioritization especially challenging is that it takes place in a multi-dimensional universe of objectives and there are no clear or easy way to follow rules. A number of methodologies have been followed over the years to approach prioritization in a systematic way. Described briefly below are four such approaches<sup>82</sup>.

Defining categories of care. This approach was used in new Zealand in the early 90s. It takes the less political approach of broadly defining general categories of care then leaving it to the politicians and health providers to make more specific decisions with the categories. While it limits the effect of opposition, the lack of specificity however may not achieve efficient allocation of resources and creates opportunities for conflicts of interest.

Utilizing explicit criteria. Variants of this approach were used in the United Kingdom, the Netherlands, and the state of Oregon in the US. In this approach, a specified basic package of services is provided or financed based on an agreed criteria list. The criteria can include community needs, community preferences, economic evaluations of cost-effectiveness, public health considerations, and any of the other topics identified in the earlier section of this paper. While this approach will produce a specific set of benefits, it is not easy to achieve. Difficulties arise from the measurements and achieving agreements on the relative weights assigned to each of the criteria used.

Using guidelines or technology assessments. This approach focuses on the technical efficacy of different interventions. Guidelines of treatment are provided to the practitioners and patients to follow. While it clearly defines when services are technically beneficial, this approach often does not include the economic component or community preferences and values.

Using formulas or models. This approach uses models and assessments, such as the burden of disease and cost-effectiveness, to create a packages of services. This involves the empirical work of collecting information on the costs and benefits of all the interventions to be considered then creating a common currency for measuring and comparing the benefits. Social preferences can influence how the different benefits are combined and valued. While this approach does combine qualitative and quantitative methods, it needs a lot of data (typically not available in the required level of detail) and does not take into account the economic rationale for public intervention.

Each of the approaches briefly and generically described above has advantages and disadvantages. It may be possible to combine different elements of individual approaches to tailor an approach appropriate for a specific country. To help the

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<sup>81</sup> If you are cynical, it is a game. If you are driven, it is a struggle, and if you are practical, it is life.

<sup>82</sup> This section relies heavily on Bitran, 1998 which relied heavily on Cumming, 1994.

participants of the core course, a case study will be presented for an actual prioritization activity that took place in Bangladesh in 1998. The Bangladesh case combined approaches 2 and 4 and produced an “essential services package” (ESP<sup>83</sup>). The case study highlights the difficulties faced by the Bangladeshi team. Participants are expected to critique the approach used in Bangladesh and to offer alternative approaches. Participants will also be asked to create a Best-practice approach to prioritization in the development of a package of Reproductive Health Services.

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<sup>i</sup> Dietary behavioral change can achieve significant improvements in micronutrient status at little or no increased cost, especially for vitamin A when increasing children’s intake of yellow-orange fruits and green leafy vegetables. However bio-availability of micro-nutrients may be limited when the habitual diet is low in fat (vitamin A), low in vitamin C (iron) or includes tea and/or coffee consumption at meal times. Although the most sustainable micronutrient intervention, cost-effectiveness of dietary behavioral change remains doubtful since proof for impact is limited. (Johnson-Welch (1999) Focusing on Women Works: Research on improving micronutrient status through food based interventions. Synthesis Paper, ICRW/OMNI).

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<sup>83</sup> The choice of the title, ESP, over PES (Package of essential services) does not imply that the providers of the package have extra sensory perception that allows them to know what the patients want.