Every newborn and child healthy

Solutions and innovations to save newborn lives

Risk of death is high for both mother and newborn in the first few days of life. There has been an explosion of interest and research in preventing newborn deaths,[8] but some newer interventions are not yet reflected in *Countdown* tracking. Two examples are antenatal steroids—a high-impact, evidence-based intervention delivered during preterm labour that has been associated with a 53% reduction of newborn deaths due to preterm birth complications[9]—and kangaroo mother care—a simple technique where the newborn is kept close to the mother's body in front, providing warmth, increased feeding, reduced infections and more rapid recognition of illness. New evidence shows that hospital-based kangaroo mother care can reduce deaths for newborns under 2,000 grams (almost all preterm) by 51%.[10]

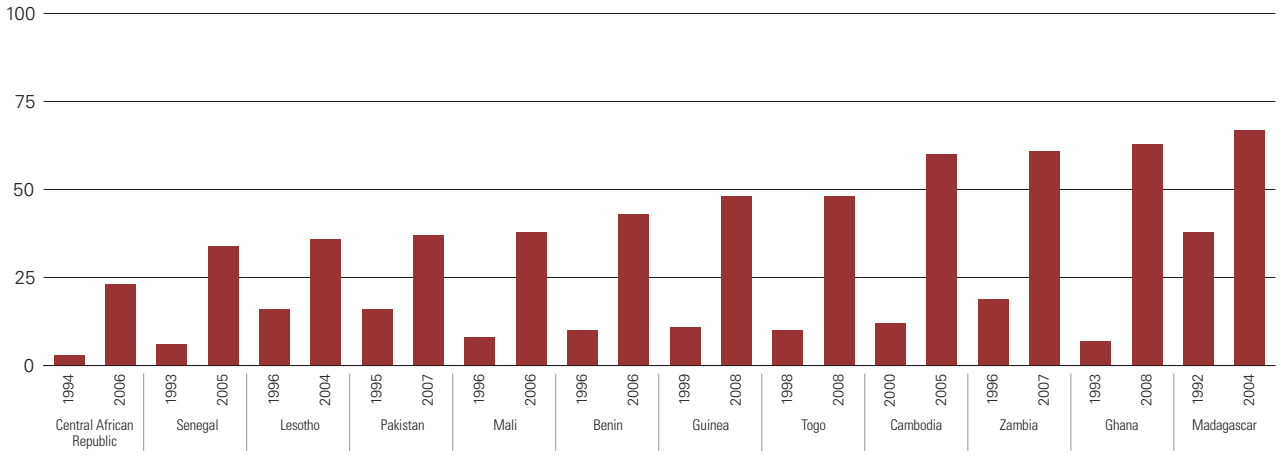
Evidence on the importance of providing postnatal care within two days of delivery has led to a joint WHO–UNICEF statement calling for broader implementation and scaling up.[11] Simple interventions such as early initiation and exclusive breastfeeding (figure 11), keeping the newborn warm, hygienic cord and skin care have the potential to reduce a large number of newborn deaths.

Other known, proven interventions to protect the lives of newborns and young infants are tracked by *Countdown* to determine progress in coverage at the country level. Rates in 2010 show some important gains, but many missed opportunities.

FIGURE 11

Exclusive breastfeeding is a major contributor to child survival

Share of infants under the age of six months who are exclusively breastfed, *Countdown* countries that have increased rates of exclusive breastfeeding among infants less than age 6 months 20 percentage points or more (%)



Source: UNICEF Global Databases, November 2009, based on Demographic and Health Surveys, Multiple Indicator Cluster Surveys and other national surveys.

Progress in preventing major childhood infectious diseases

Countdown results highlight progress on a country-by-country basis in preventing the infectious diseases responsible for the majority of child deaths. There has been important progress in combating malaria through increased use of insecticide-treated nets in malaria-endemic countries (figure 12) and in preventing mother-to-child transmission of HIV (box 6). More work needs to be done, however, for countries to reach the Roll Back Malaria target of 80% coverage of insecticide-treated nets by 2010 and universal coverage of prevention of mother-to-child transmission for HIV positive pregnant women.

Greater attention to improved water and sanitation can prevent diarrhoea

MDG target 7.C on environmental sustainability is to halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation. Median coverage in the 65 *Countdown* countries with data available since 2000 is 71% for use of an improved drinking water source and 41% for improved sanitation (figure 13). More efforts are needed to promote better hygiene and to ensure that adequate drinking water and sanitation are available to all in order to reduce child deaths from diarrhoea.

Improving infant and young child feeding practices will save lives

Available evidence demonstrates that child growth and development are optimized when:

- Breastfeeding is initiated within one hour of birth.
- Exclusive breastfeeding is continued up to age six months.
- Complementary feeding with safe and age-appropriate solid, semi-solid or soft foods is started at age six months.

BOX 6

Preventing mother-to-child transmission of HIV

HIV accounts for a relatively small proportion of deaths among children under age 5 across the *Countdown* countries as a whole. But in a subset of 15 high-HIV-burden *Countdown* countries (those with prevalence of 5% or higher), it continues to be a major threat to survival and child development (see table). Preventing HIV infection in women and children requires a strategy across the continuum of care, integrating:

- Interventions directed at reducing infection among young people with access to information and testing.
- Interventions to meet the family planning needs of women living with HIV.
- Antiretroviral therapy where needed.
- Safe practices during childbirth.
- Guidance for selecting safe and optimal infant-feeding options to prevent mother-to-child transmission of HIV.
- Provision of antiretroviral regimens for the prevention of mother-to-child transmission of HIV.
- Scaling up early infant diagnosis to ensure prompt and effective treatment of infections.

There have been dramatic increases in prevention of mother-to-child transmission coverage in 9 of the 15 high-HIV-burden *Countdown* countries. Cameroon and the Central African Republic saw more modest gains, and Botswana (already at 95% coverage) and Congo saw limited gains (Malawi and the United Republic of Tanzania do not have data for 2008). These results demonstrate what is possible when both commitment and resources are focused on reaching a target population with a specific intervention.

Share of HIV-infected women ages 15–49 who received antiretroviral regimens for prevention of mother-to-child transmission, high-HIV-burden *Countdown* countries, 2006 and 2008

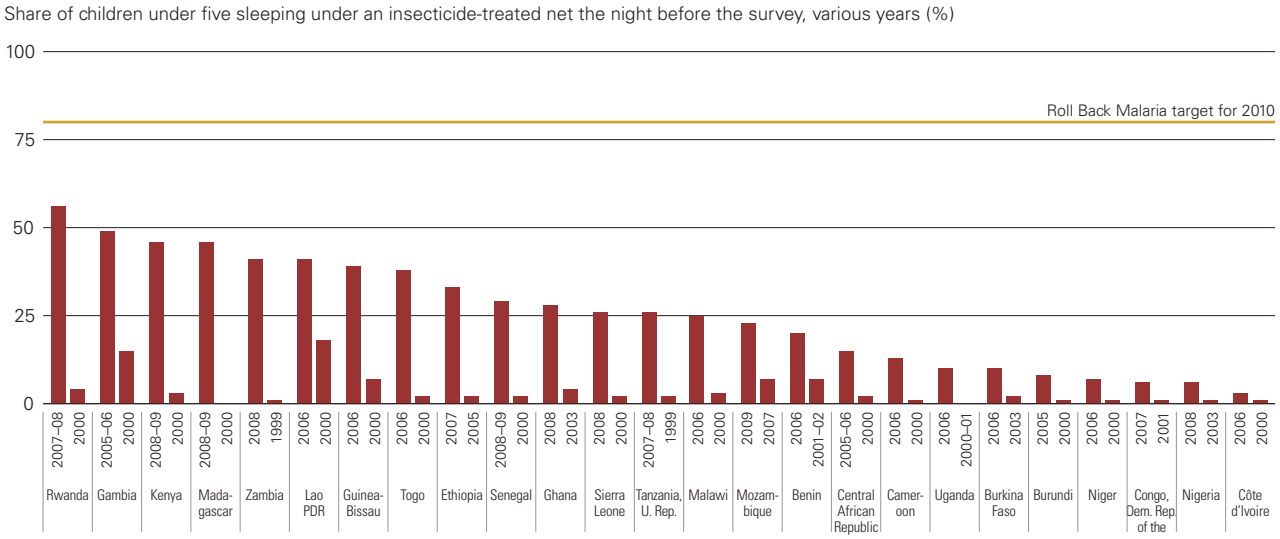
	2006		2008	
Country	Point estimate	Range estimate	Point estimate	Range estimate
Botswana	95	95–>95	>95	75–>95
Cameroon	22	18–30	28	20–53
Central African Republic	18	16–20	23	16–44
Gabon	4	3–5	35	22–70
Kenya	48	42–59	56	37–>95
Lesotho	17	15–18	57	43–>94
Malawi	14	12–16	—	41–>95
Mozambique	13	11–15	42	26–93
South Africa	50	43–60	73	53–>95
Swaziland	62	57–69	>95	87–>95
Tanzania, U. Rep.	15	14–16	—	53–>95
Uganda	25	22–28	50	36–95
Zambia	35	31–39	59	43–>95
Zimbabwe	17	16–19	36	26–64

— is not available.

Source: 2006 data, WHO and UNICEF (2007), with the denominators derived from unpublished UNAIDS-WHO estimates; 2008 data, UNICEF, UNAIDS, WHO, and UNFPA 2009.

FIGURE 12

Some *Countdown* countries show rapid progress in preventing malaria through insecticide-treated nets



Note: For each country, the left bar shows the most recent year with data on coverage values and the right bar shows data for a previous year.
Source: UNICEF Global Databases, November 2009, based on Demographic and Health Surveys, Multiple Indicator Cluster Surveys and other national surveys.

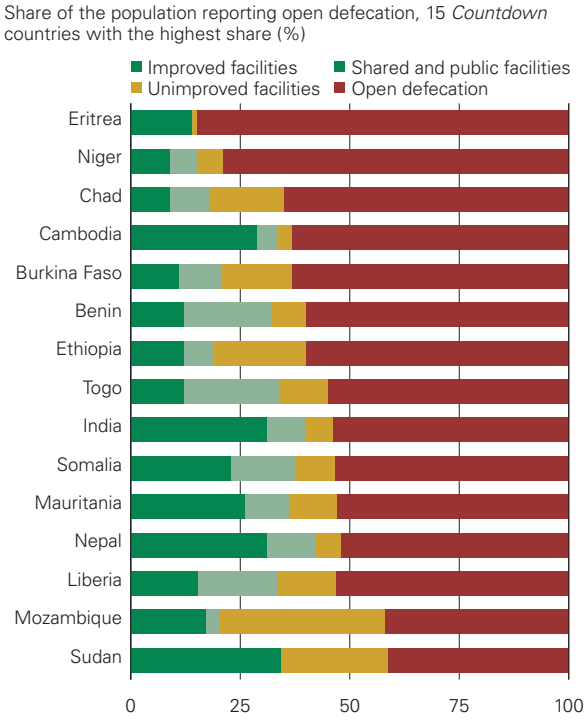
Some *Countdown* countries are progressing in these areas, and 12 have increased exclusive breastfeeding rates by 20 percentage points or more (see figure 11). But most *Countdown* countries have much room for improvement (figure 14). Current median coverage based on latest available estimates since 2000 are 48% (ranging from 20% to 78%) for early initiation of breastfeeding, 34% (ranging from 1% to 88%) for exclusive breastfeeding among infants less than age 6 months and 66% (ranging from 15% to 93%) for timely introduction of complementary feeding.

Vaccination and vitamin A

Vaccination coverage rates have generally remained high, with median 2008 coverage rates in *Countdown* countries of 79% for measles vaccination (ranging from 23% in Chad to 99% in Brazil and Turkmenistan) and 83% for diphtheria and tetanus with pertussis (DPT3) vaccination (ranging from 20% in Chad to 99% in Morocco and Peru). Vaccination rates for neonatal tetanus also remain high, with a median of 83% of newborn children considered protected at birth in 2008 (ranging from 47% in Lao PDR to 97% in Sierra Leone). New vaccines for pneumococcal pneumonia and diarrhoea due to rotavirus can build on these delivery successes as they are scaled up in the next few years. Vitamin A supplementation (two doses) estimates for 2008

FIGURE 13

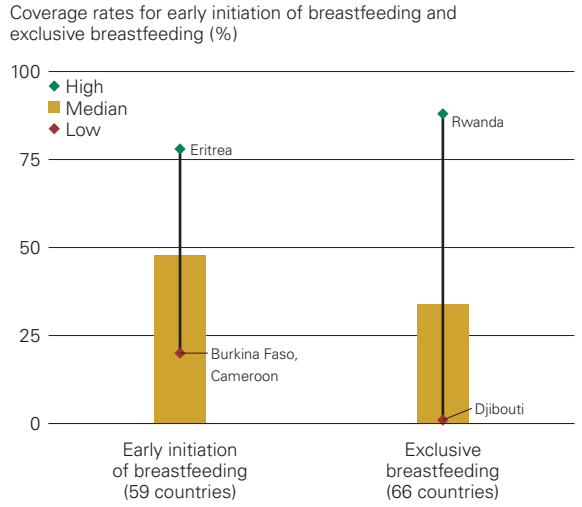
Open defecation, common in some Countdown countries, increases the risk of diarrhoeal disease



Source: WHO–UNICEF Joint Monitoring Programme for Water Supply and Sanitation 2010.

FIGURE 14

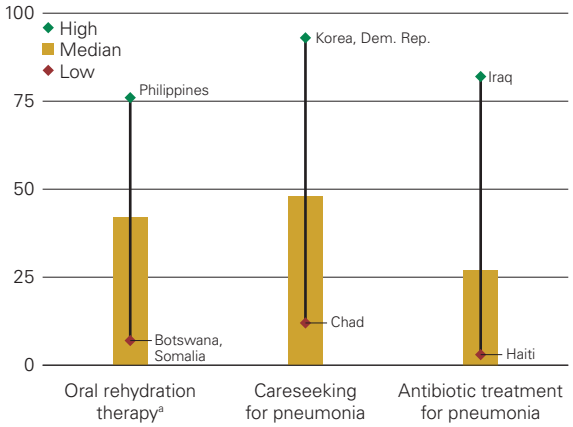
Early initiation of breastfeeding also contributes to child survival



Source: UNICEF Global Databases, November 2009, based on Demographic and Health Surveys, Multiple Indicator Cluster Surveys and other national surveys.

FIGURE 15

Too few children with diarrhoea or pneumonia receive correct treatment



a. Oral rehydration salts, recommended home fluids or increased fluids, and continued feeding.

Source: UNICEF Global Databases, November 2009, based on Demographic and Health Surveys, Multiple Indicator Cluster Surveys and other national surveys.

show a median of 86%, ranging from no vitamin A coverage in Chad and Gabon to 100% coverage in Burkina Faso and Somalia. Chad and Gabon faced major challenges to vitamin A delivery in 2008: Chad experienced a looting of supplies, and Gabon lacked the funding needed to carry out Child Health Days. These two examples are important reminders of the challenges many *Countdown* countries face in sustaining basic services.

Coverage of correct treatment for childhood illness remains too low

Progress in care-seeking and case management of common childhood diseases has been very slow. Scaling up case management requires families and communities to be aware of danger signs and to bring children for care. It also requires quality care to be available, which requires adequate human resources and commodities. Unless care is provided close to home, reducing mortality rates will be difficult (box 7).

Correct treatment of diarrhoea includes reducing susceptibility to severe diarrhoea and dehydration through improved nutrition and prompt treatment of watery diarrhoea with oral rehydration salts solution and zinc while continuing to feed the child.[12] Median coverage of correct treatment of diarrhoea in *Countdown* countries was only 42% (figure 15)—a figure that masks variability across countries and in some instances within countries. There has been rapid policy uptake of "new" low-osmolarity oral rehydration salts and zinc, with 46 *Countdown* countries reporting having adopted such a policy.

Correct treatment of childhood pneumonia and neonatal infections (sepsis and pneumonia) includes antibiotics. This requires a caregiver to recognize signs of illness and seek care from a trained provider. Median coverage of careseeking was only 48% for the 64 *Countdown* countries with data available, while the median coverage of children with suspected signs of pneumonia who actually received an antibiotic was 27% in 35 countries with data.

Correct treatment of childhood malaria requires administration of an effective antimalarial within 24 hours of onset of symptoms.[13] The current "gold standard" treatment in most malaria-endemic countries is artemisinin-based combination therapies, for which funding and procurement have rapidly increased. Beginning in 2010, *Countdown* will track coverage by type of antimalarial treatment because treatment with chloroquine and other antimalarials is no longer effective in most malaria-endemic countries. Figure 16 shows that tracking coverage by type of antimalarial is important for determining whether children are receiving effective treatment.

BOX 7

Bringing care for sick children closer to home

What evidence is there of the effect of community case management?

Community case management requires trained community health workers to deliver high-impact, curative interventions to children whose families lack access to facility-based care. Recent WHO–UNICEF joint statements summarize the evidence that community health workers can recognize and manage common life-threatening childhood illnesses.[1] The statements cover diarrhoea, pneumonia, malaria and uncomplicated severe acute malnutrition. Several studies report positive outcomes of community case management on pneumonia, including a recent review suggesting a 70% reduction in pneumonia deaths among children under age 5[2] and others showing the effectiveness of community health worker administration of oral antibiotics for neonatal pneumonia in the absence of referral. Community case management has also been used effectively for malaria (including with artemisinin-based combination therapies) and diarrhoea treatment.

Where is community case management working?

Since the 2008 *Countdown* report, 11 countries have changed policy to allow community-based management of pneumonia, increasing the total number of *Countdown* countries in support of community case management to 29. Nepal and Senegal have already scaled up community programmes for management of pneumonia with positive results. Ethiopia and Uganda recently adopted supportive policies and are ready to introduce and rapidly scale up integrated community case management. And India and Malawi now implement integrated management of childhood illness at the community level. Preliminary results from Malawi have shown that health surveillance assistants (government-paid, multipurpose extension health workers) can perform an integrated assessment and treat children appropriately. Families appreciated the proximity and quality of care, and service utilization increased.

What is next for community case management?

Few studies or programmes have systematically evaluated the process and effect of integrated community case management for a comprehensive range of neonatal and childhood illnesses. However, evaluations of the effect of community case management for multiple childhood illness conditions are under way. More work is also necessary to assess a recommended package of services and tasks that a community health worker can deliver reasonably well. For example, would a community health worker providing community case management also be able to provide home-based newborn care? Studies to develop simplified antibiotic regimens for the treatment of neonatal sepsis have commenced and will inform the future role of community health workers in the treatment of severe newborn illness. Two studies from South Asia, for example, present evidence that community health workers can correctly provide treatment for neonatal sepsis with injection gentamicin, but this intervention has not been widely implemented.[3] Community case management may be particularly effective in settings where populations are experiencing conflict or natural disasters, but data are lacking.

Countdown countries are tracking the evidence on community case management for newborns carefully, because standard inpatient treatment for seven days for newborn illnesses is not feasible for some families in many of these settings. Including the treatment of uncomplicated severe acute malnutrition in integrated community case management is a possibility.

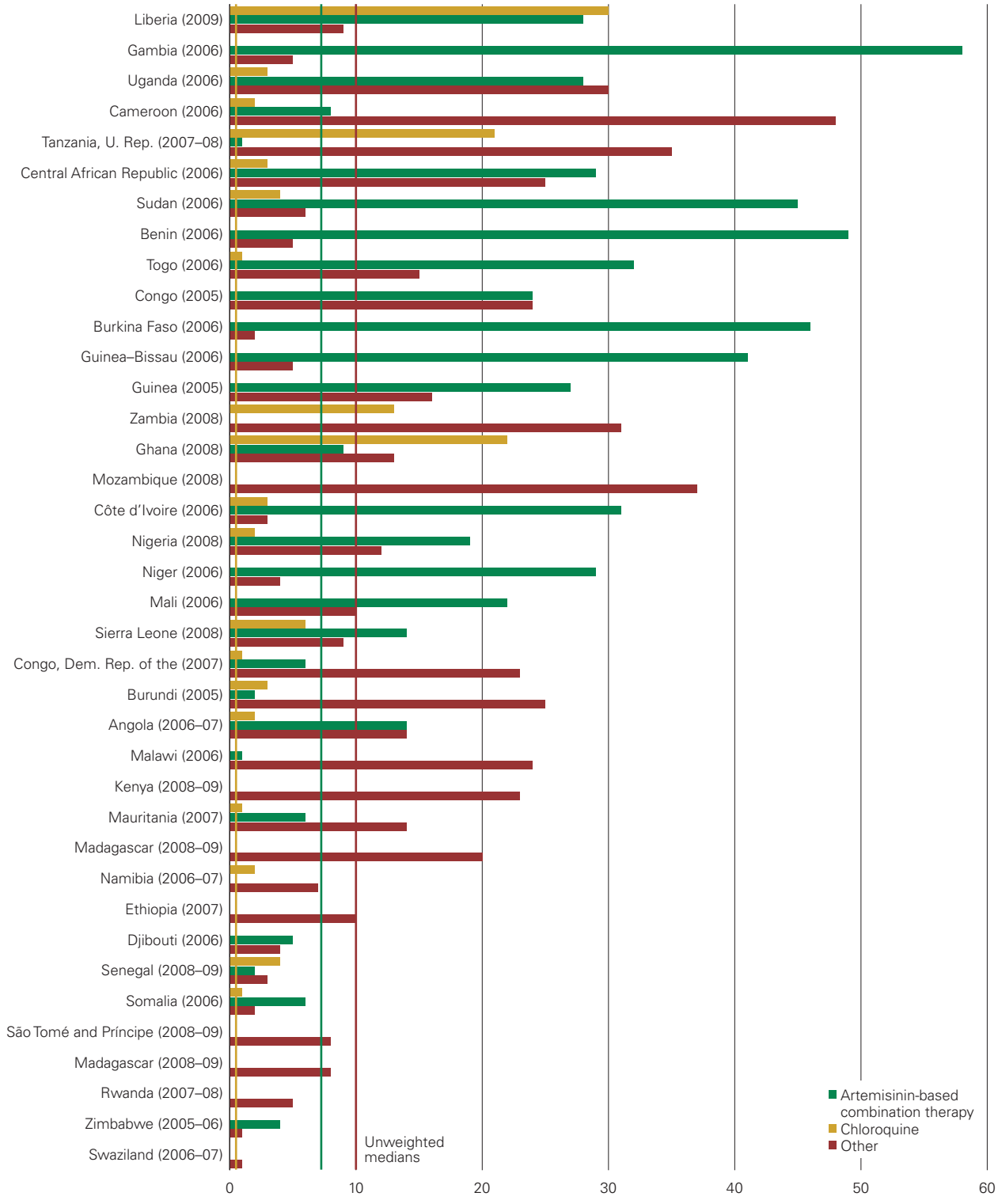
Notes

1. WHO and UNICEF 2004b.
2. Theodoratou and others 2010.
3. Bang and others 1999; Baqui and others 2009.

FIGURE 16

Saving lives from malaria requires the right medicine

Children with fever receiving antimalarial treatment, selected *Countdown* countries, various years (%)



Source: UNICEF Global Databases, November 2009, based on Demographic and Health Surveys, Multiple Indicator Cluster Surveys and other national surveys.

The building block framework: health systems and policies to save the lives of women, newborns and children

Coverage of effective interventions is to a large extent the result of the quality and effectiveness by which health services reach people and people's to access them. A well functioning health system comprises several building blocks that have multiple relationships and interactions, with people at the centre. To understand the context in which countries are making efforts to scale up maternal, newborn and child health interventions, the *Countdown* examined progress of key indicators related to each of the building blocks, complementing the information on intervention coverage (a direct function of service delivery).

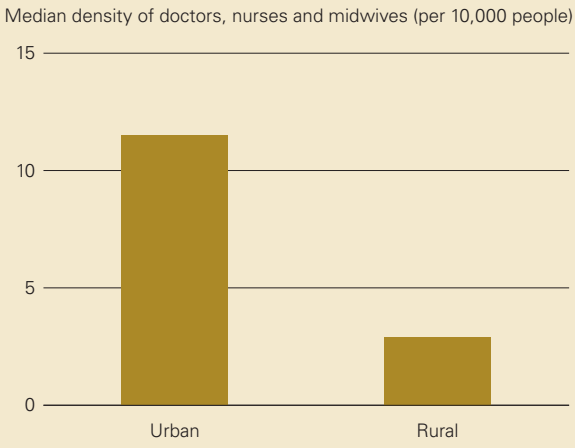
Health systems are more than building blocks

Source: Alliance for Health Policy and System Research 2010.

Human resources

The challenge: shortages and maldistribution

Only 15 *Countdown* countries (22%) meet the critical threshold of 23 doctors, nurses and midwives per 10,000 people generally considered necessary to deliver essential health services.[14] The shortage is compounded by uneven geographic distribution within countries.[15]



Note: Median refers to 26 *Countdown* countries with data available.
Source: WHO 2009.

Increased investment in education of health workers, strategies for motivating health workers to remain in underserved areas and effective regulatory frameworks (including those for skills substitution) are among the effective policy options for addressing critical workforce shortages and maldistribution.

One potential solution: task-sharing to supplement services

Ethiopia, Ghana and Pakistan are among the countries addressing workforce shortages and maldistribution challenges through comprehensive strategies, including deployment of health service providers at the community level.[16] The United Republic of Tanzania and Zambia have authorized nonphysician clinicians to carry out certain specialized tasks.[17] More than 90% of caesarean sections in rural areas in Malawi and Mozambique are performed by surgical technicians, with low morbidity and mortality.[18]

Health financing

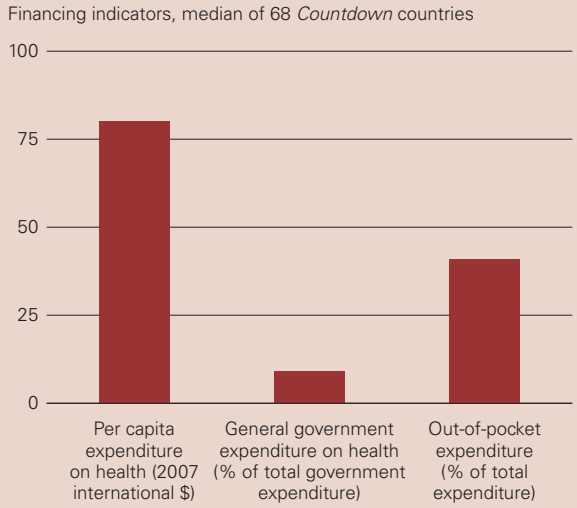
The challenge: excessive out-of-pocket payments

Median per capita health expenditure in the *Countdown* countries is $80 (in 2007 international dollars), and only five countries devote at least 15% of their national budgets to health.[19] Only five countries have out-of-pocket expenditure as a percentage of total health expenditure of less than 15%; above this value households may be more vulnerable to catastrophic payments.[20]

Maternal, newborn and child health services should be available, of good quality and free at the point of delivery in order to remove financial barriers to access and utilization.[21]

Some solutions to move to universal access

A key step towards universal coverage is to move away from out-of-pocket payments through prepayment and risk-pooling schemes.[22] Several countries—Mexico, with *Seguro Popular*,[23] and China,[24] with the New Rural Cooperative Medical Scheme—are moving in this direction. In Mali and Rwanda social health insurance schemes are achieving high coverage[25] and showing a positive effect on access to priority health services, including maternal, newborn and child health.[26] Uganda increased coverage of essential health services, particularly among the poor, by removing user fees.[27]



Source: WHO 2010.

Medicines and equipment

The challenge: continuous supply of commodities

Access to medical products, technologies and essential drugs remains erratic in many countries, contributing to low coverage of family planning and poor availability of emergency obstetric care services.

Updated policies on care for maternal, newborn and child conditions need to be accompanied by investment in infrastructure, medicines and supplies, in order to reach universal coverage and make an impact on women's and children's lives.

Possible solutions

Local production of zinc blister packs in Bangladesh combined with health education and promotion through private sector has rapidly increased coverage of zinc use rate in children with diarrhoea to 20%.[28] Globally, UNICEF increased procurement of zinc from 20.5 million tablets in 2006 to 158 million tablets in 2008.

Source: WHO, UNFPA, UNICEF, and AMDD 2009.

Health information

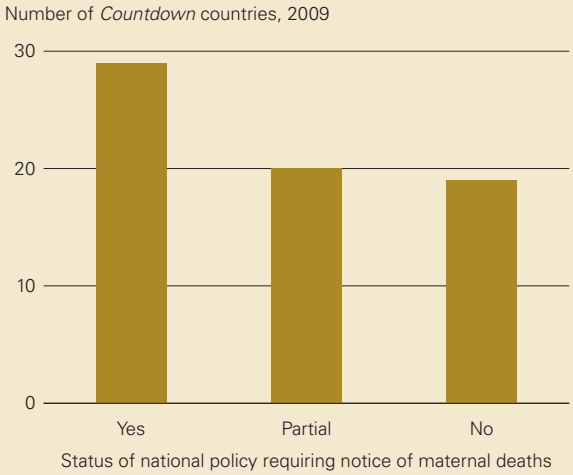
The challenge: timely, high-quality information

Decision-makers in most *Countdown* countries do not have the information they need to inform decisions and guide action.[29] Vital statistics, including birth registration and maternal death notification, and programme funding are examples of mechanisms that can address barriers to the quality of and access to health services.[30]

One potential solution: maternal death audit and remedial action

The comprehensive monitoring and evaluation approach adopted in Tamil Nadu, India, which includes stronger information generation and use for decision-making accompanied by maternal death audits and surveillance, has improved maternal and child indicators.[31]

South Africa has also made progress in institutionalizing maternal death audits, which can reduce maternal and perinatal mortality.[32]



Source: WHO 2009.

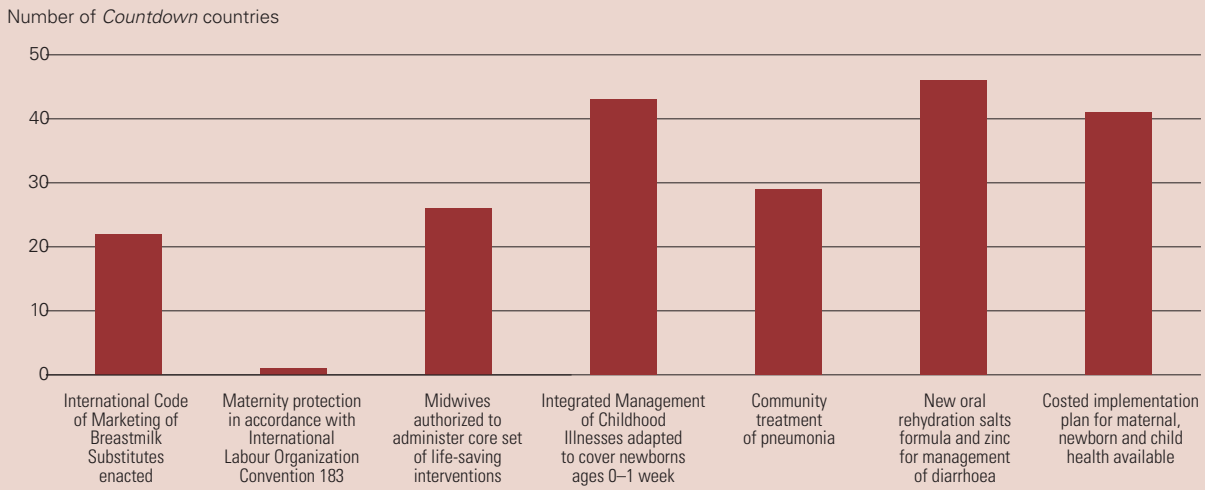
Governance and leadership

The challenge: universal adoption of policies that support maternal, newborn and child health

Too few countries have adopted evidence-based policies to increase access to and quality of essential maternal, newborn and child health services as recommended by WHO–UNICEF joint statements.[33] Just over one-third of *Countdown* countries allow midwives to perform lifesaving interventions, while 46 countries have updated guidelines on management of diarrhoea. Nevertheless, 29 countries have adopted national policies allowing community health workers to manage pneumonia, compared with 18 in the 2008 *Countdown*. The presence of a national, costed MNCH implementation plan, necessary to estimate and allocate resources efficiently was reported by 41 countries.

Possible solutions

Bangladesh and Nepal have shown that policies that increase access to treatment of diarrhoea and pneumonia in the community are effective in increasing coverage of child health interventions.[34] Allowing midwives to perform lifesaving interventions increases access to basic emergency obstetric care services and can reduce maternal mortality.[35]



Source: WHO 2009.

Equal care for every mother and child

National data on coverage levels often hide important disparities among population subgroups. The *Countdown* equity analyses include systematic breakdowns of key coverage indicators by wealth quintiles, maternal education, sex of the child, urban/rural residence and region of the country.[36]

One way to summarize equity analyses is through a mean coverage index. Each country profile includes a figure showing the mean coverage index consisting of an unweighted average of four intervention areas across the continuum of care. Each area includes selected indicators for eight reproductive, maternal, newborn and child interventions: family planning (need for family planning satisfied), maternal and newborn health (at least one antenatal visit and skilled attendant at delivery), immunizations (measles, BCG and DPT3) and curative child care (diarrhoea and pneumonia management: oral rehydration and continued feeding and care seeking for pneumonia).

Figure 18 uses Benin as an example. The mean coverage index of the eight interventions is 73% among children in the richest wealth quintile compared with 41% in the poorest wealth quintile. The top part of figure 18 shows the coverage gap—or how much of an increase is needed to achieve universal coverage with all eight interventions. The gap equals 100% minus the mean coverage index and is much greater for the poor than for the rich.

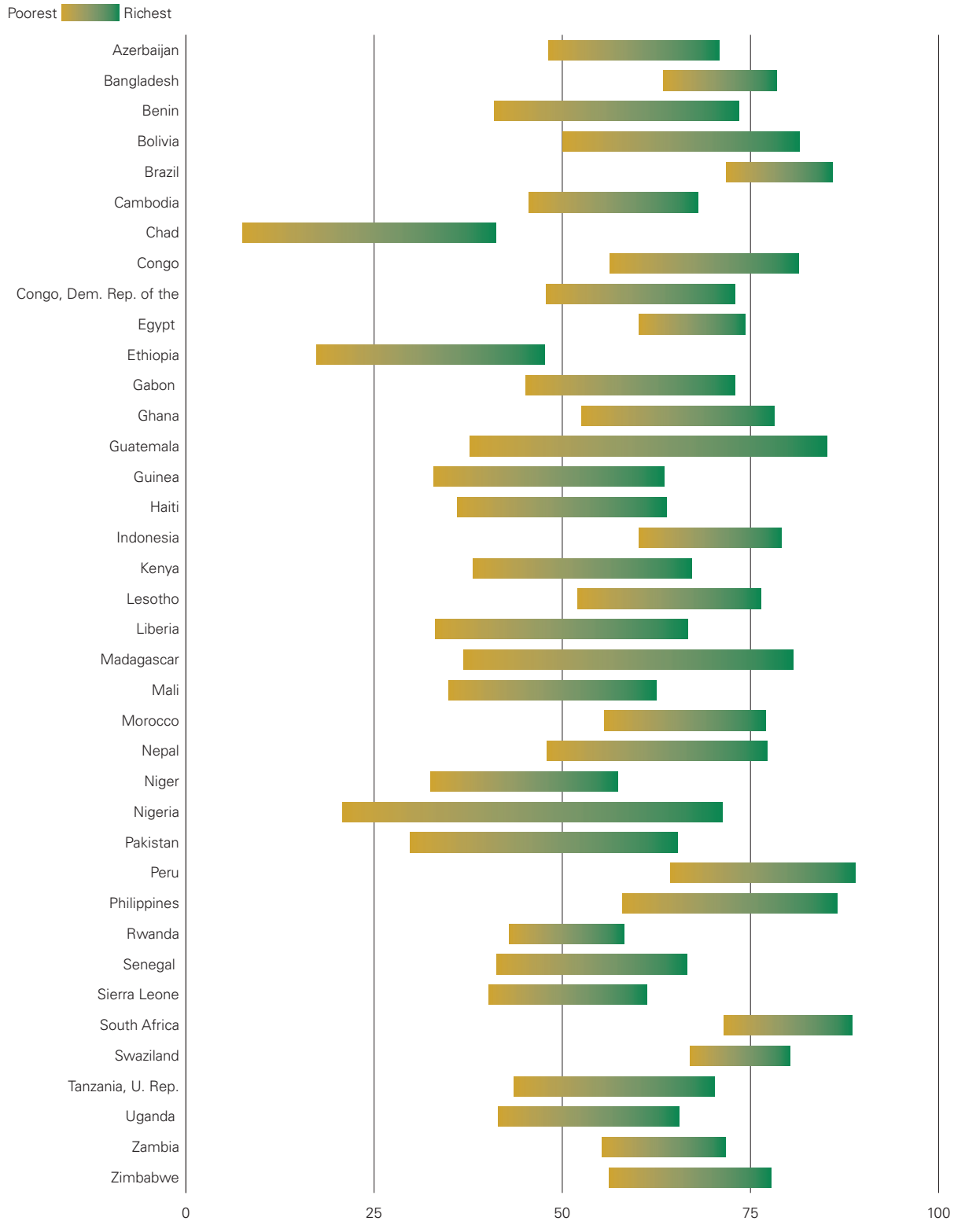
In all 38 *Countdown* countries with Demographic and Health Survey data, intervention coverage is substantially higher among mothers and children from better-off households than among those from poor households (figure 17). Countries with similar levels of overall coverage may differ substantially in terms of equity. For example, both Guatemala and Zambia have an overall coverage index of 59%, but in Guatemala mothers and children from households in the poorest quintile show 38% coverage while in Zambia they show 55% coverage. Countries with smaller gaps between rich and poor—such as Bangladesh, Brazil, Egypt, Swaziland and Zambia—should be better studied to understand how they managed to reduce inequalities.

The equity analysis gaps are markedly larger for maternal and newborn interventions than interventions delivered to older children (figure 19). Interventions that are most frequently delivered in fixed health facilities (for example, antenatal, delivery or postnatal care) tend to show greater disparities than those delivered at the community level (for example, vaccinations, vitamin A supplementation or insecticide-treated nets). Family planning interventions, which may be delivered in fixed facilities or at the community level, fall between these two groups in terms of inequalities. Early initiation of breastfeeding shows remarkably small disparities—possibly because it is largely dependent on longstanding cultural practices not yet affected by promotion efforts.

FIGURE 17

The gap in intervention coverage between rich and poor households varies by country

Mean coverage index, poorest and richest wealth quintiles, selected *Countdown* countries, various years (%)

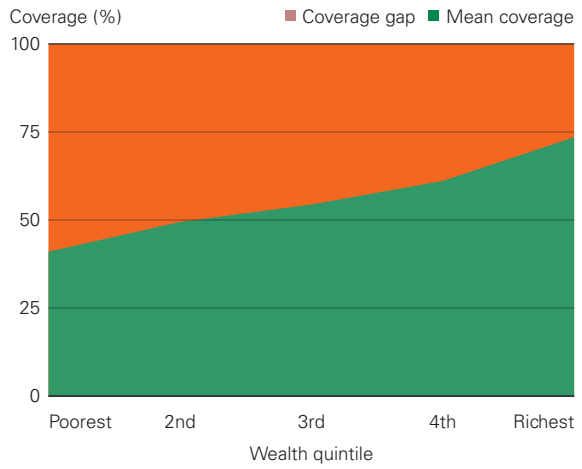


Note: Mean coverage index is based on coverage rates of eight maternal, newborn and child health interventions: met need for family planning, at least one antenatal care visit, skilled attendant at birth, measles vaccination, DPT3 vaccination, BCG vaccination, oral rehydration and continued feeding, and careseeking for pneumonia.

Source: Demographic and Health Surveys.

FIGURE 18

The coverage gap in Benin for eight maternal, newborn and child health interventions decreases as wealth increases

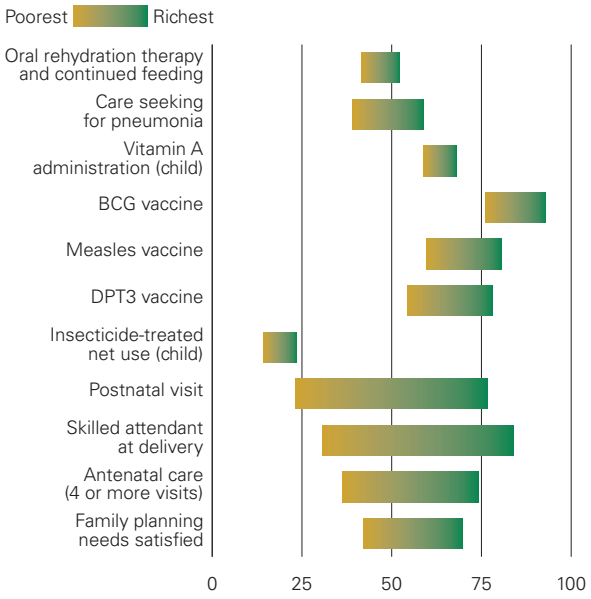


Source: Demographic and Health Surveys.

FIGURE 19

The degree of inequality is markedly larger for maternal and newborn interventions than for those delivered to older children

Average coverage levels of selected reproductive, maternal, newborn and child interventions, poorest and richest wealth quintile, 38 *Countdown* countries with data



Note: Postnatal care refers to postnatal care for all newborn infants.
Source: Demographic and Health Surveys.

Country spotlight: Brazil's success in narrowing the gap

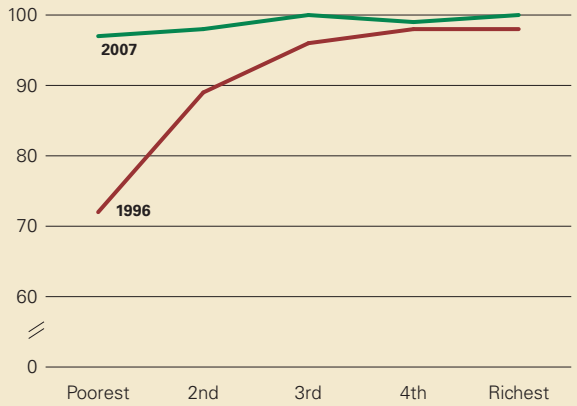
Brazil is one *Countdown* country on target to reach the MDGs related to child health and nutrition. Under-five mortality has been falling an average of 5.2% a year since 1990, considerably faster than the 4.4% needed to reach the MDG target. Currently, 22 of every 1,000 children now die before their fifth birthday.[37] Underweight prevalence among children under age 5 dropped from 5.7% in 1990 to 2.2% in 2006–2007,[38] while stunting fell from 19.9% to 7.1%.

Overall progress has been accompanied by a sharp decline in inequalities (see figures). In 1996 just over 70% of all births to mothers in the poorest socioeconomic quintile received skilled care during childbirth, but by 2007 coverage was universal. Likewise, stunting prevalence among children in the poorest quintile fell from 40% in 1989 to 10% in 2007, while remaining stable at 3%–5% in the richest quintile. These are only two examples among many for which equity improved in the last two decades.

Brazil's success in reducing inequities cannot be attributed to a single factor. Although economic growth has been moderate since 1990, income distribution showed marked improvements in recent years. A nationwide, tax-based unified health system without any user fees was launched in 1988, and geographic targeting has guided the deployment of family health teams of doctors, nurses and community health workers in the poorest areas of the country. As a result, primary health care coverage is now virtually universal, as seen with skilled delivery. In addition, Brazil's conditional cash transfer programmes cover about one third of the population, and multiple integrated health sector initiatives—including immunization, HIV control and breastfeeding promotion activities—have been highly successful.

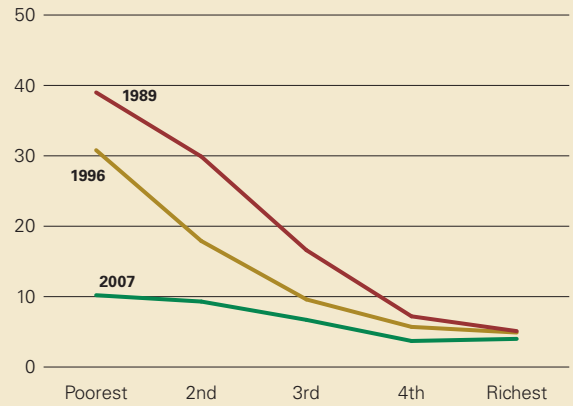
Perhaps more than any single policy or initiative, the reduction of regional and socioeconomic disparities in health and development has been a central element in Brazil's political agenda for the last 20 years, and it is now starting to bear fruit.

Coverage of skilled attendant at birth, by income quintile, Brazil, 1996 and 2007 (%)



Source: Barros and others 2010.

Prevalence of stunting among children under age 5, by income quintile, Brazil, 1989, 1996 and 2007 (%)

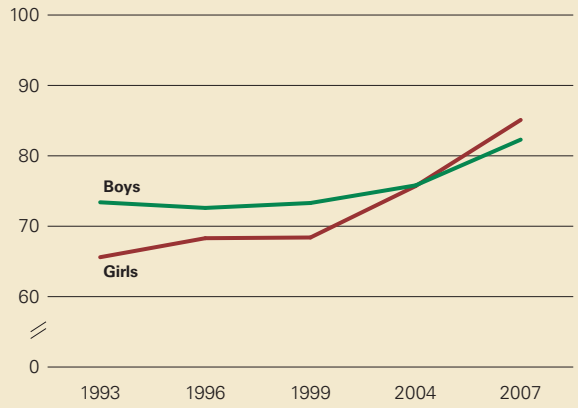


Source: Monteiro and others 2010.

Country spotlight: Narrowing gender differentials in Bangladesh

Historically, Bangladeshi boys have been more likely to receive lifesaving interventions than girls have (see figure), a pattern common in South Asian countries. But in the past decade Bangladesh has seen gender disparities effectively disappear in coverage of measles vaccination. As with Brazil, the observed success cannot be attributed to a single initiative, but a series of initiatives aimed at women's empowerment (micro-credit, women's groups, female education and the like) coupled with greater access to health care, particularly through selective outreach by community workers, may account for these changes. An in-depth analysis in the Matlab area shows that community health workers contributed to reducing gender inequities in immunization coverage.[39] Nevertheless, socioeconomic disparities in Bangladesh remain large.

Coverage of measles vaccination, by gender, Bangladesh, 1993–2007 (%)



Source: Demographic and Health Surveys.