Countdown: The 2015 report

More than a decade ago the momentum generated by the Millennium Development Goals sparked those involved in the 2003 Lancet Child Survival Series to propose and launch *Countdown to 2015*— a global movement to track, stimulate and support country progress towards the health-related Millennium Development Goals, particularly goals 4 (reduce child mortality) and 5 (improve maternal health). *Countdown* is supra-institutional and includes academics, governments, international agencies, professional associations, donors, nongovernmental organizations and other members of civil society, with *The Lancet* as a key partner. The new initiative pledged to hold regular conferences, with the aim of "ensuring that there is an overall mechanism for improving accountability, re-energising commitment, and recognizing accomplishments in child survival."[3]

Countdown compiled data to launch its first report in 2005, which was followed by five more reports launched at various high-level fora in 2008, 2010, 2012, 2013 and 2014.[4] This is the final report in the series. From its original focus on child survival, *Countdown* expanded to track progress on reproductive, maternal, newborn and child health indicators across the continuum of care. At the heart of the *Countdown* reports are two-page country profiles, which summarize the most recent data on intervention coverage, maternal and child mortality, and nutrition. The country profiles also highlight socioeconomic inequalities in intervention coverage and two of the main drivers of coverage (health systems and policies, and financing).

Countdown has evolved in many ways. It has grown from 11 to 43 institutional stakeholders. The number of countries monitored has increased from 60 to 75, to cover the countries where more than 95% of global deaths of mothers and children occur. And the number of indicators tracked has expanded from 35 to 73, as the scope has shifted beyond child survival and in response to new evidence. By including new, proven interventions

in its profiles even before data were available for many countries, *Countdown* helped raise their visibility and speed their scale-up.

Countdown recognized the importance of engaging at the country level and in 2012 embarked on a set of case studies aimed at understanding how countries have achieved progress (box 1). *Countdown* is also the primary source of coverage information for monitoring the implementation of the recommendations of the Commission on Information and Accountability for Women's and Children's Health and the independent Expert Review Group reports.[5]

The number of reports on specific reproductive, maternal, newborn and child health issues has grown rapidly since *Countdown*'s inception. *Countdown*'s niches have been its action-oriented focus on intervention coverage and its user-friendly synthesis of information in the country profiles. Its principles have not changed: monitor the coverage of evidence-based, cost-effective interventions; maintain a country orientation; and build on existing goals and monitoring efforts.[6] *Countdown*'s realization of these principles has helped increase the global visibility of women's and children's health and helped boost the unacceptably slow rate of progress in reducing maternal, newborn and child mortality during the 1990s.[7] More information on *Countdown*, the explanatory framework guiding its work and its data sources and methods are included in annexes A–H and at www.countdown2015mnch. org. *Countdown* databases are publicly available at http://countdown2015mnch.org/about-countdown/ countdown-data.[8]

This final *Countdown* report begins with a summary of results from 2015 based on the data presented in the country profiles, building on a companion article published in *The Lancet*.[9] It examines trends in mortality and nutrition; intervention coverage (including inequality); financial flows to reproductive, maternal, newborn and child health; and supportive policy and systems measures. Although some topics

Countdown country case studies

Countdown in-depth country case studies use evidence to tell a story about country progress in adopting supportive policies, ensuring adequate funding for reproductive, maternal, newborn and child health, increasing equitable coverage and reducing maternal, newborn and child mortality. They focus on understanding how and why Millennium Development Goals 4 and 5 were achieved and on strengthening country-level capacity to lead monitoring efforts and use the results to improve their programmes.

The portfolio of *Countdown* case studies includes Afghanistan, Bangladesh,[1] China, Ethiopia, Kenya, Malawi, Niger,[2] Pakistan, Peru and Tanzania,[3] all at various stages of completion. Each case study is led by a country-based institution that is not directly involved with reproductive, maternal, newborn and child health programme implementation, supported by a multidisciplinary team. The analysis is guided by a common evaluation framework[4] and spans *Countdown*'s four technical domains (coverage, equity, health systems and policies, and financing). The case studies culminate in a dissemination phase in which results are communicated using a variety of modes to inform national policymakers and civil society representatives and to increase the use of evidence in decisionmaking.

The portfolio of countries represents a diverse set of contexts and experiences. Most countries present a mixed set of achievements across the continuum of care, and all face remaining challenges such as stubborn inequities and insufficient, unreliable financial flows to maternal, newborn and child health programmes. Afghanistan, Ethiopia, Malawi and Tanzania are highly donor dependent, calling into question the sustainability of the health gains achieved. All countries implemented reforms to increase access to health services (including pro-poor strategies), which were important in improving health overall, but equity gaps persist. Even in Peru, where great strides were made in reducing glaring inequalities the case study results show that coverage of a skilled attendant at delivery is 100% in the richest quintile but only 65% in the poorest quintile.[5]

Although a mosaic of context-specific factors shaped each case study country's progress, several common themes emerged. For example, an important part of country plans to achieve Millennium Development Goal 4 included adopting multisectoral strategies to address childhood undernutrition and particularly high rates of stunting. Most countries also introduced integrated approaches to managing childhood illnesses at the facility and community levels. Similarly, improved maternal health outcomes across countries were associated with increased access to skilled attendants at delivery and emergency obstetric care, as well as such non–health sector changes as improved women's access to education and income-earning strategies and better transportation. Strong political leadership and commitment were critical in directing resources to reproductive, maternal, newborn and child health programmes. Slower progress in newborn mortality than in child mortality, reported in all countries, was attributed in part to the lack of political prioritization of newborn health until the mid-2000s and in part to the fact that several effective, low-cost interventions (including community approaches to delivering services) were scaled up only in recent years. Further efforts are needed to improve the quality of intrapartum care in facilities in order to achieve needed reductions in maternal and newborn deaths and stillbirths.

Countdown is planning to synthesize the lessons from the case studies once they have all been concluded at the end of 2015. Special attention will be given to the challenges of conducting the case studies in ways that expanded the capacity of local teams and country ownership of the data and results. These lessons should inform efforts to increase demand for and use of data by national decisionmakers in the Sustainable Development Goals era.

Notes

1. El Arifeen and others 2014.
2. Amouzou, Habi and Bensaid 2012.
3. Afnan-Holmes and others 2015.
4. Bryce and others 2011.
5. Huicho and others forthcoming.

and countries have seen considerable progress, important gaps remain that cannot be forgotten in the transition to the Sustainable Development Goals. The report then assesses changes in data availability and their implications for programme managers

and decisionmakers. It concludes by turning a critical lens on the Sustainable Development Goals framework and future accountability efforts, drawing from *Countdown*'s 10 years of monitoring experience.

Progress towards Millennium Development Goals 4 and 5

Preventing the needless deaths of women and children depends on a collective ability to deliver high-quality services to those who need them and to improve the social determinants of health. The under-five mortality rate, the proportion of child deaths occurring during the neonatal period and the maternal mortality ratio are key indicators of women's and children's health and well-being. Mortality trends provide a reality check on how well the global community and countries are reaching their populations with equitable coverage of proven interventions across the reproductive, maternal, newborn and child continuum of care. This section reviews the 75 *Countdown* countries' progress towards the mortality targets for Millennium Development Goals 4 and 5 and towards lower undernutrition rates, which are a key indicator for Millennium Development Goal 1 on poverty eradication.

Laudable progress in reducing mortality—but more must be done

Based on modelled estimates, the global maternal mortality ratio has fallen around 45% over the past two decades, and the number of maternal deaths has dropped from around 523,000 a year to 289,000.[10] Although the reduction in mortality appears to have accelerated—75% of *Countdown* countries reduced maternal mortality faster over 2000–13 than over 1990–2000[11]—very few *Countdown* countries will achieve Millennium Development Goal 5. Between 2003 and 2009 more than half of maternal deaths worldwide were due to haemorrhage, hypertensive disorders and sepsis—causes that are preventable by providing quality antenatal, childbirth and postnatal care.[12]

Recognition of the association between increasing use of contraception and declining maternal and newborn deaths has boosted resources for family planning programmes[13] (box 2). Evidence of the importance of reaching adolescents with family planning and nutrition programmes to improve birth outcomes, as well as for their own health,

has also increased attention to this population group.[14]

Stillbirths were not visible as a public health problem when *Countdown* was launched. Improved estimates showing a major burden of 2.6 million third trimester stillbirths—1.2 million of them during the intrapartum period—and evidence of close links with maternal and newborn health led to the stillbirth rate being included in *Countdown* country profiles in 2010. Without a specific target, global visibility for stillbirths may remain limited in the Sustainable Development Goals era, and progress will remain slow unless all stakeholders act together and include stillbirths in the future programmatic and measurement agenda.[15]

The global under-five mortality rate has dropped 53% since 1990, from 91 deaths per 1,000 live births to 43 in 2015.[16] The annual rate of reduction has accelerated steeply over time, suggesting that more progress can be expected in coming years. In 2000 there were 9.8 million deaths a year of children under age 5.[17] Pooled estimates for 42 countries that included more than 90% of child deaths identified the leading causes as neonatal conditions (33%), diarrhoea (22%), pneumonia (21%), malaria (9%) and AIDS (3%).[18] Estimates for 2015 suggest 5.9 million deaths a year,[19] with a major shift in the causes: Preterm birth complications now cause 18% of deaths among children under age 5. Together preterm birth complications and other neonatal causes account for 45% of deaths among children under age 5. Deaths due to pneumonia (16%), diarrhoea (9%), malaria (5%) and AIDS (1%) have declined in relative terms—and even more so in absolute terms.[20] The growing concentration of deaths in the newborn period, and improved understanding about causes of newborn deaths, has sparked the scale-up of long-existing interventions and the development of new ones, some of which are monitored by *Countdown* (see below).

Some 25 of the 75 *Countdown* countries achieved the 4.4% annual rate of reduction in under-five

Family planning—reaching an unmet need

There is an established body of evidence on the benefits of family planning on women's, newborn's and children's health.[1] Family planning can contribute to women's empowerment, environmental sustainability (through a reduction in births) and economic prosperity for individuals, communities and countries.[2] Although greater access to family planning has been a key development objective for about 50 years, efforts to help women prevent unintended pregnancies and unsafe abortions have historically been uneven, resulting in mixed progress across and within countries.[3] Median coverage of demand for family planning satisfied (the proportion of women at risk of pregnancy who want to avoid or delay childbearing and who are using a modern method of contraception) in the 57 *Countdown* countries with available survey data from 2009 or later is only 55%, and coverage ranges widely, from 13% in South Sudan to 93% in Viet Nam (see table 2 in the main report).

Use of family planning remains highly inequitable, with the wealthiest quintile having a higher demand for family planning satisfied than the poorest in all regions. This pattern is evident in almost all 41 *Countdown* countries with available disaggregated data (see figure), and the difference in coverage between the wealthiest and poorest quintile exceeds 5 percentage points in all but 6 of them. The gaps between wealth quintiles tend to decrease as national coverage increases. Viet Nam, with the highest coverage, shows almost no difference in demand for family planning satisfied between wealth quintiles. In contrast, Cameroon, Nigeria and other Sub-Saharan African countries where national coverage is below 50% show wide disparities.

An in-depth analysis of Tanzania's slow progress towards Millennium Development Goal 5 found that family planning programmes introduced in the late 1980s and 1990s, although high on the political agenda, were weakly implemented, and consequently the national contraceptive prevalence rate rose only about 1 percentage point a year, from 7% in 1991 to 27%

in 2010. Unmet need (the proportion of women who are married or in union who want to delay or avoid a pregnancy but are not using a method of contraception) also varies widely across regions and between urban and rural areas, with women in rural areas and in the Lake and Western zones encountering frequent stockouts of methods and cultural barriers to using modern methods. In response, Tanzania revitalized its national family planning programme in 2010, and donor support for reproductive health increased.[4] This example illustrates the importance of sustained political and financial support for family planning and the need for community-based and other approaches to improve demand for and acceptability of modern contraceptive methods, particularly among the underserved.

There is reason to be optimistic for the future. The launch of Family Planning 2020 sparked renewed emphasis in the global community on accelerating progress in family planning. Considerable advocacy work is under way to ensure that sexual and reproductive health and rights remain at the forefront of the post-2015 global agenda. For example, the Sustainable Development Goals for health and gender reference reproductive health and explicitly mention the importance of family planning information and education.[5] Technical work is also ongoing to improve measurement of demand for family planning satisfied in order to increase the comparability of data in low- and middle-income countries. Better means of monitoring trends along with continued global emphasis on making contraceptive services available will spur progress in the years ahead.

Notes

1. Ahmed and others 2012; Glasier and others 2006; Cleland and others 2012.
2. UNFPA 2008; Singh, Darroch and Ashford 2014; Cleland and others 2006.
3. Darroch and Singh 2013; Fabic and others 2015.
4. Afnan-Holmes and others 2015.
5. United Nations 2015.

(continued)

mortality that was required to reach Millennium Development Goal 4 in 2015, but the evidence suggests that only 6 countries achieved the 5.5% annual rate of reduction in maternal mortality needed to achieve Millennium Development Goal 5 (table 1). Four countries—Cambodia, Eritrea, Nepal and Rwanda—achieved the required annual rate of reductions for both goals.

Of the 60 countries selected in 2005 for monitoring by *Countdown* based on their high under-five mortality (either an under-five mortality rate of 90 or more deaths per 1,000 live births or 50,000 or more child deaths a year), 28 have "graduated" from *Countdown* by reducing child mortality below the threshold. In 2008 *Countdown* broadened its scope to include maternal mortality and set a threshold

BOX 2 (CONTINUED)
Family planning—reaching an unmet need

Use of family planning remains highly inequitable, with the wealthiest quintile having a higher demand for family planning satisfied than the poorest in most *Countdown* countries

Demand for family planning satisfied for 41 *Countdown* countries with available data, by wealth quintile, 2009 or later (%)
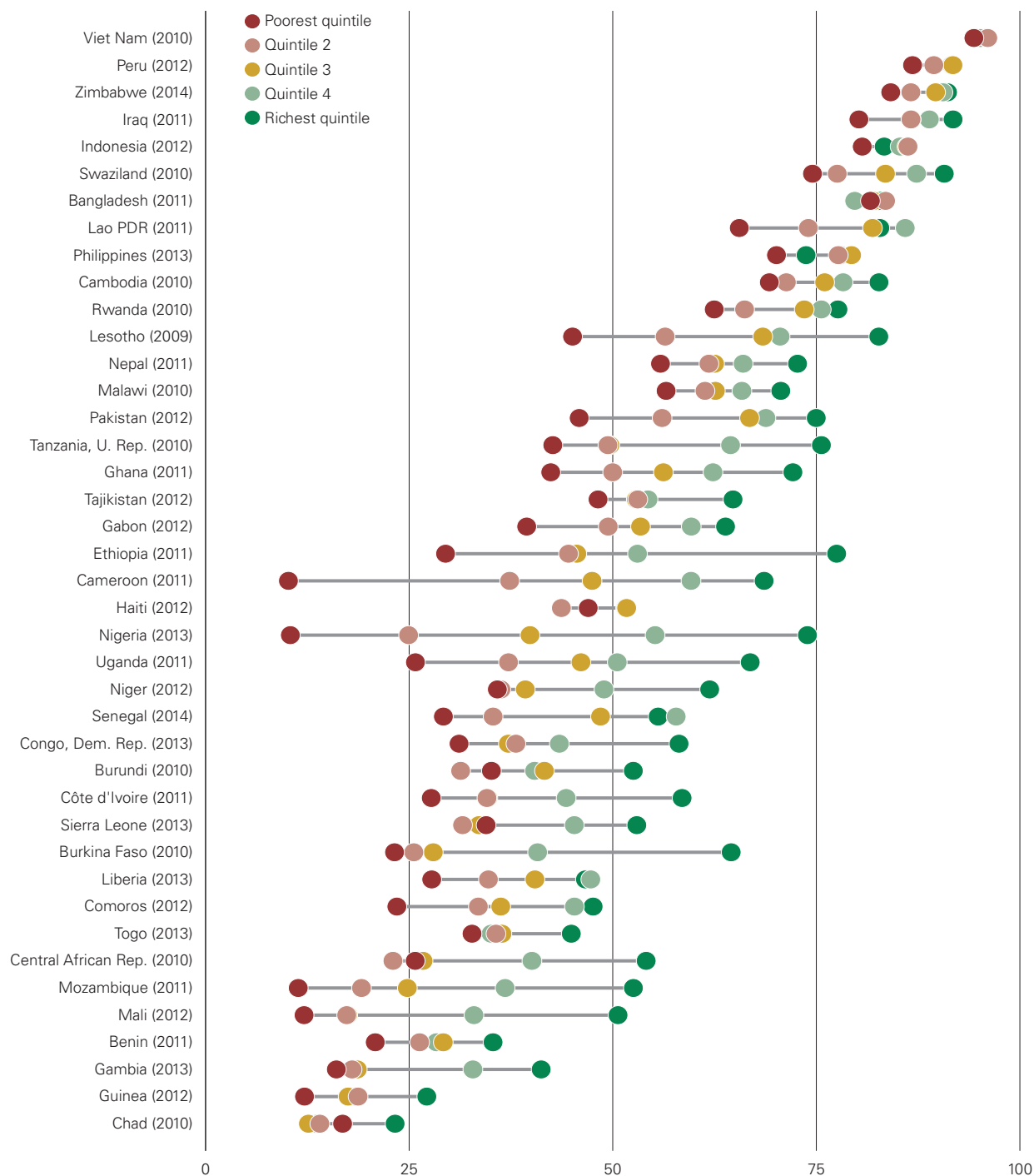
Source: Re-analysis of Demographic and Health Survey and Multiple Indicator Cluster Survey data sets at the International Center for Equity in Health at the Federal University of Pelotas.

TABLE 1

TABLE 1
***Countdown* countries and graduation status based on original entry criteria**

Country	Year entered Countdown	Selection criteria used for inclusion as *Countdown* country[a]	Under-five mortality				Maternal mortality			Country graduated from *Countdown*?
			Rate (deaths per 1,000 live births) 2015	Average annual rate of reduction (%) 1990–2015	Number of deaths[b] 2015	Share of deaths occurring during the neonatal period (%) 2015	Ratio (deaths per 100,000 live births) 2013	Average annual rate of reduction (%) 1990–2013	Number of deaths 2013	
Afghanistan	2005	Under-five mortality rate and number of child deaths	91.1	2.7	94,261	38.4	400	4.7	4,200	No
Angola	2005	Under-five mortality rate and number of child deaths	156.9	1.5	169,310	31.4	460	4.9	4,400	No
Azerbaijan	2005	Under-five mortality rate	31.7	**4.4**	7,206	59.2	26	3.6	43	Yes
Bangladesh	2005	Number of child deaths	37.6	**5.4**	119,326	62.3	170	5.0	5,200	No
Benin	2005	Under-five mortality rate	99.5	2.4	37,092	32.2	340	2.4	1,300	No
Bolivia	2008	Maternal mortality ratio and number of maternal deaths	38.4	**4.7**	9,415	51.2	200	4.0	550	Yes
Botswana	2005	Under-five mortality rate	43.6	0.9	2,488	51	170	3.1	83	Yes
Brazil	2005	Number of child deaths	16.4	**5.2**	52,415	54.6	69	2.4	2,100	No
Burkina Faso	2005	Under-five mortality rate and number of child deaths	88.6	3.3	60,477	30.3	400	2.9	2,800	No
Burundi	2005	Under-five mortality rate and number of child deaths	81.7	3.0	36,970	35.8	740	2.3	3,400	Yes
Cambodia	2005	Under-five mortality rate and number of child deaths	28.7	**5.6**	10,257	51.5	170	**8.1**	670	Yes
Cameroon	2005	Under-five mortality rate and number of child deaths	87.9	1.8	71,348	29.5	590	0.9	4,900	No
Central African Rep.	2005	Under-five mortality rate	130.1	1.2	21,029	33.3	880	1.3	1,400	No
Chad	2005	Under-five mortality rate and number of child deaths	138.7	1.7	82,728	28.8	980	2.3	5,800	No
China	2005	Number of child deaths	10.7	**6.5**	181,574	51.5	32	4.7	5,900	No
Comoros	2012	c	73.5	2.1	1,897	46.9	350	2.6	90	c
Congo	2005	Under-five mortality rate	45	2.9	7,269	40.6	410	2.1	690	Yes
Congo, Dem. Rep.	2005	Under-five mortality rate and number of child deaths	98.3	2.6	304,558	30.9	730	1.5	21,000	No
Côte d'Ivoire	2005	Under-five mortality rate and number of child deaths	92.6	2.0	75,393	41.7	720	0.1	5,300	No
Djibouti	2005	Under-five mortality rate	65.3	2.4	1,429	51.6	230	2.4	55	Yes
Egypt	2005	Number of child deaths	24	**5.1**	65,775	54.5	45	4.1	860	No
Equatorial Guinea	2005	Under-five mortality rate	94.1	2.8	2,655	35.6	290	**7.0**	79	No
Eritrea	2008	Maternal mortality ratio and number of maternal deaths	46.5	**4.7**	7,764	39.4	380	**6.2**	880	No
Ethiopia	2005	Under-five mortality rate and number of child deaths	59.2	**5.0**	184,186	47.5	420	5.0	13,000	No
Gabon	2005	Under-five mortality rate	50.8	2.4	2,579	46.3	240	2.0	130	Yes
Gambia	2005	Under-five mortality rate	68.9	3.6	5,540	44.6	430	2.1	340	Yes
Ghana	2005	Under-five mortality rate and number of child deaths	61.6	2.9	54,061	47	380	2.9	3,100	No
Guatemala	2008	Maternal mortality ratio and number of maternal deaths	29.1	4.1	12,858	46.2	140	2.8	660	Yes
Guinea	2005	Under-five mortality rate and number of child deaths	93.7	3.7	42,073	34	650	2.2	2,800	No
Guinea-Bissau	2005	Under-five mortality rate	92.5	3.6	5,883	44	560	2.2	360	No
Haiti	2005	Under-five mortality rate	69	3.0	17,841	36.6	380	2.4	1,000	Yes
India	2005	Under-five mortality rate and number of child deaths	47.7	3.9	1,200,998	57.9	190	4.5	50,000	No
Indonesia	2005	Number of child deaths	27.2	**4.5**	147,162	50.2	190	3.5	8,800	No
Iraq	2005	Under-five mortality rate and number of child deaths	32	2.1	38,682	58.1	67	2.0	710	Yes
Kenya	2005	Under-five mortality rate and number of child deaths	49.4	2.9	74,429	45.3	400	0.8	6,300	No
Korea, Dem. People's Rep.	2008	Maternal mortality ratio and number of maternal deaths	24.9	2.2	9,271	54.9	87	−0.1	310	Yes
Kyrgyzstan	2012	c	21.3	**4.5**	3,644	54.5	75	0.5	110	c
Lao PDR	2008	Maternal mortality ratio	66.7	3.6	11,613	44.9	220	**6.8**	400	Yes
Lesotho	2008	Maternal mortality ratio	90.2	−0.1	5,570	36.7	490	1.7	280	Yes
Liberia	2005	Under-five mortality rate	69.9	**5.2**	10,509	34.7	640	2.8	980	Yes
Madagascar	2005	Under-five mortality rate and number of child deaths	49.6	**4.7**	40,075	40.4	440	2.3	3,500	Yes
Malawi	2005	Under-five mortality rate and number of child deaths	64	**5.3**	40,048	34.3	510	3.2	3,400	Yes
Mali	2005	Under-five mortality rate and number of child deaths	114.7	3.2	82,710	33.2	550	3.1	4,000	No
Mauritania	2005	Under-five mortality rate	84.7	1.3	11,050	42.5	320	2.9	430	No
Mexico	2005	Number of child deaths	13.2	**5.0**	31,278	53.1	49	2.5	1,100	Yes
Morocco	2008	Maternal mortality ratio and number of maternal deaths	27.6	4.3	19,759	64.3	120	4.1	880	Yes
Mozambique	2005	Under-five mortality rate and number of child deaths	78.5	**4.5**	82,387	35	480	4.3	4,800	No
Myanmar	2005	Under-five mortality rate and number of child deaths	50	3.2	46,284	52.5	200	4.5	1,900	Yes
Nepal	2005	Under-five mortality rate and number of child deaths	35.8	**5.5**	19,900	61.6	190	**6.0**	1,100	Yes
Niger	2005	Under-five mortality rate and number of child deaths	95.5	**4.9**	87,967	29	630	2.0	5,600	No

(continued)

TABLE 1 (CONTINUED)

Countdown countries and graduation status based on original entry criteria

Country	Year entered *Countdown*	Selection criteria used for inclusion as *Countdown* country[a]	Under-five mortality				Maternal mortality			Country graduated from *Countdown*?
			Rate (deaths per 1,000 live births)	Average annual rate of reduction (%)	Number of deaths[b]	Share of deaths occurring during the neonatal period (%)	Ratio (deaths per 100,000 live births)	Average annual rate of reduction (%)	Number of deaths	
			2015	1990–2015	2015	2015	2013	1990–2013	2013	
Nigeria	2005	Under-five mortality rate and number of child deaths	108.8	2.7	750,111	32	560	3.1	40,000	No
Pakistan	2005	Under-five mortality rate and number of child deaths	81.1	2.1	431,568	56.7	170	3.6	7,900	Yes
Papua New Guinea	2005	Under-five mortality rate	57.3	1.8	11,963	42.9	220	3.3	460	Yes
Peru	2008	Maternal mortality ratio and number of maternal deaths	16.9	**6.2**	10,483	48.7	89	4.4	530	Yes
Philippines	2005	Number of child deaths	28	2.9	65,613	45.1	120	−0.6	3,000	No
Rwanda	2005	Under-five mortality rate and number of child deaths	41.7	**5.2**	14,207	44.3	320	**6.1**	1,300	Yes
São Tomé and Príncipe	2012	c	47.3	3.4	297	36.7	210	2.8	14	c
Senegal	2005	Under-five mortality rate and number of child deaths	47.2	**4.4**	27,059	44.6	320	2.2	1,700	Yes
Sierra Leone	2005	Under-five mortality rate and number of child deaths	120.4	3.1	26,466	28.8	1,100	3.3	2,400	No
Solomon Islands	2012	c	28.1	1.4	470	43.2	130	3.8	23	c
Somalia	2005	Under-five mortality rate and number of child deaths	136.8	1.1	60,537	29.2	850	1.8	3,900	No
South Africa	2005	Number of child deaths	40.5	1.6	41,930	26.6	140	0.4	1,500	Yes
South Sudan	2012	d	92.6	4.0	39,487	43.1	730	3.0	3,000	No
Sudan	2005	Under-five mortality rate and number of child deaths	70.1	2.4	89,488	43.1	360	3.8	4,600	No
Swaziland	2005	Under-five mortality rate	60.7	0.8	2,221	23.4	310	2.5	120	Yes
Tajikistan	2005	Under-five mortality rate	44.8	3.5	11,799	46.6	44	1.9	120	Yes
Tanzania, United Rep.	2005	Under-five mortality rate and number of child deaths	48.7	**4.9**	98,180	39.3	410	3.5	7,900	No
Togo	2005	Under-five mortality rate	78.4	2.5	19,512	34.3	450	1.6	1,100	Yes
Turkmenistan	2005	Under-five mortality rate	51.4	2.3	5,868	44	61	0.3	68	Yes
Uganda	2005	Under-five mortality rate and number of child deaths	54.6	**4.9**	85,291	34.9	360	3.2	5,900	No
Uzbekistan	2012	c	39.1	2.4	26,205	52.1	36	2.6	220	c
Viet Nam	2012	c	21.7	3.4	34,191	52.4	49	4.4	690	c
Yemen	2005	Under-five mortality rate and number of child deaths	41.9	**4.4**	34,351	53.1	270	2.3	2,100	Yes
Zambia	2005	Under-five mortality rate and number of child deaths	64	**4.4**	38,990	33.8	280	3.1	1,800	Yes
Zimbabwe	2005	Under-five mortality rate and number of child deaths	70.7	0.3	38,087	33.7	470	0.4	2,100	Yes

Note: In 2008 eight countries were added when *Countdown* began to track progress in countries with high maternal mortality: Bolivia, Democratic People's Republic of Korea, Eritrea, Guatemala, Lao People's Democratic Republic, Lesotho, Morocco and Peru.

a. Under-five mortality rate of 90 or more deaths per 1,000 live births in 2004, 50,000 or more child deaths a year in 2004, maternal mortality ratio of more than 550 maternal deaths per 100,000 live births in 2005, or maternal mortality ratio of more than 200 maternal deaths per 100,000 live births and 750 or more maternal deaths a year in 2005.

b. The 2005 *Countdown* report includes the under-five mortality rate but not the absolute number of deaths.

c. Added in 2012 to reconcile the *Countdown* and Global Strategy for Women's and Children's Health country lists.

d. Added based on its high burden of child and maternal mortality after it was formed in 2012.

Source: UN Inter-agency Group for Child Mortality Estimation 2015; Maternal Mortality Estimation Inter-agency Group 2014.

of more than 550 maternal deaths per 100,000 live births or more than 200 maternal deaths per 100,000 live births and 750 or more maternal deaths a year. Eight countries were added to the original 60, seven of which have "graduated" by reducing maternal mortality below the threshold. Seven other priority countries were added in 2008, to maintain consistency with the list of priority low-income countries included in the Global Strategy for Women's and Children's Health. South Sudan was also added based on its high burden of child and maternal mortality after it was formed in 2012.

Alternative estimates for maternal and child mortality are available from the Institute of Health Metrics and Evaluation. Although its estimates for specific countries may differ from those presented in table 1, the overall conclusions are the same: Only a small minority of low- and middle-income countries will achieve either Millennium Development Goal 4 or 5.

Nutrition is crucial—and far too many children are still hungry

The past 10 years have also witnessed a growing understanding of the role of nutrition in mortality and human development.[21] Undernutrition— including foetal growth restriction, stunting, wasting and deficiencies of vitamin A and zinc—

Breastfeeding: a life-saving practice with both short- and long-term health and development benefits

The importance of breastfeeding in preventing deaths of children in low- and middle-income countries is well recognized,[1] and scaling up breastfeeding could save about 800,000 deaths of children under age 5 a year.[2] But this is only part of the story. Recent research suggests that breastfeeding has long-lasting effects that go well beyond infancy, including the prevention of obesity and diabetes,[3] and of dental malocclusions.[4] Women who breastfeed are less likely to develop type 2 diabetes or breast or ovarian cancer.[5]

Evidence from many countries also shows that breastfeeding results in an average increase of 3–4 points in intelligence scores,[6] and a recent study from Brazil suggests that it also leads to better performance in school and higher incomes at age 30.[7] Thus breastfeeding is crucial not only for women and children in low-income countries, but also for all women and children in other settings. Improved breastfeeding practices will help prevent noncommunicable diseases and boost intellectual development around the world.

International organizations recommend that all children be exclusively breastfed for the first six months of life and continue to receive breast milk with appropriate complementary foods until at least age 2. Most countries are far from complying with these recommendations, and infant feeding indicators have shown little progress in the recent past. Exclusive breastfeeding at ages 0–5 months is increasing about 1 percentage point a year in *Countdown* countries (see table 3 in the main report), but the median coverage is still only 39% (see table 2 in the main report). Furthermore, most countries show reductions in the proportion of children who are still breastfed at ages 12–15 months and at ages 20–23 months.

Breastfeeding is the only recommended behaviour tracked by the *Countdown* for which children from poor families do better than children from rich families (see figure), possibly because breastfeeding is regarded as "not modern" in many countries, and better-off families are switching to artificial feeding. The gaps are particularly wide for continued breastfeeding. Because of the important protection afforded by breast milk against child deaths, the results suggest that the poor–rich gap in under-five mortality would be even wider in the absence of breastfeeding.

Breastfeeding is the only recommended behaviour tracked by the *Countdown* for which children from poor families do better than children from rich families

Mean prevalence of breastfeeding indicators for 43 *Countdown* countries with available data from national surveys, by wealth quintile, 2009 or later (%)
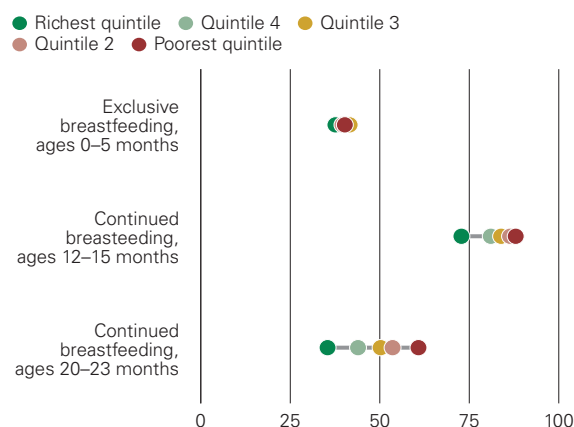
● Richest quintile ● Quintile 4 ● Quintile 3
● Quintile 2 ● Poorest quintile

Source: Re-analysis of Demographic and Health Survey and Multiple Indicator Cluster Survey data sets at the International Center for Equity in Health at the Federal University of Pelotas.

International funding to promote breastfeeding has declined since the 1990s, in contrast to funding for other reproductive, maternal, newborn and child health interventions.[8] Improved breastfeeding practices will contribute to the achievement of several Sustainable Development Goals, including those related to child mortality, noncommunicable diseases, nutrition, child development and economic growth. Protecting, promoting and supporting breastfeeding, particularly among the poor, deserve renewed investments and increased prioritization in the post-2015 era.

Notes

1. Sankar and others forthcoming.
2. Black and others 2013.
3. Horta, de Mola and Victora forthcoming b.
4. Peres and others forthcoming.
5. Chowdhury and others forthcoming.
6. Horta, de Mola and Victor forthcoming a.
7. Victora and others 2015.
8. Lutter and others 2011.

along with suboptimum breastfeeding (box 3) is an underlying cause of 45% of deaths of children under age 5,[22] and as many as 20% of newborn deaths are among babies with low birthweight.[23] Addressing undernutrition was critical to achieving the Millennium Development Goals and is embedded in the Sustainable Development Goals framework.

Reductions in stunting (inadequate length and height for age) and wasting (inadequate weight for height) are among the nutrition targets set by the World Health Assembly in 2012, and recent evidence shows that the world remains off track for reducing the number of children under age 5 who are stunted by 40% and childhood wasting to less than 5% by 2025.[24] Stunting is a

Stunting tends to be much more common in rural areas

Prevalence of stunting among children under age 5 in countries with national prevalence of 30% or higher and data for 2009 or later, urban and rural areas (%)
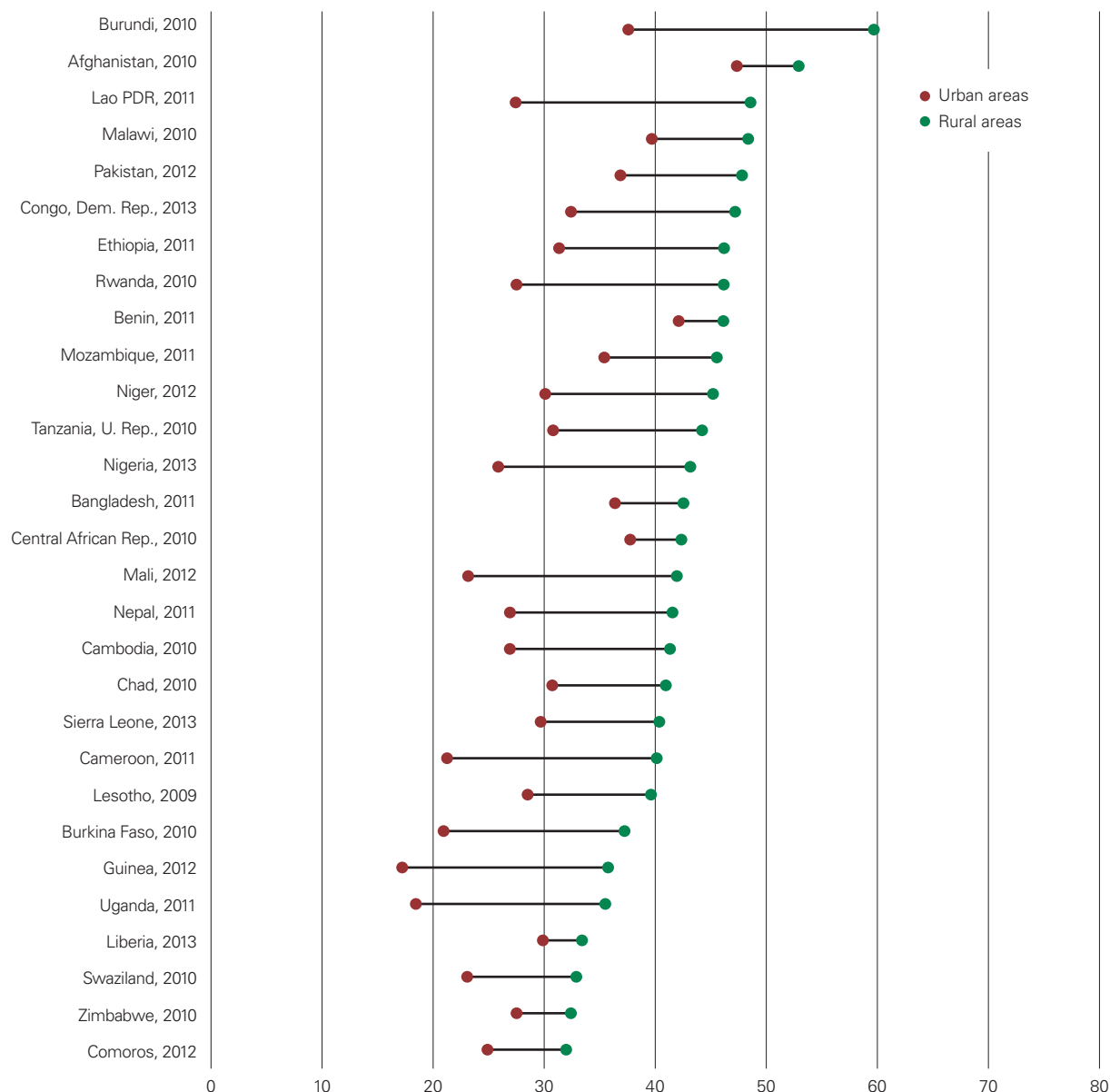
Source: Re-analysis of Demographic and Health Survey and Multiple Indicator Cluster Survey data sets at the International Center for Equity in Health at the Federal University of Pelotas.

key indicator of the quality of a child's life and reflects chronic exposure to an inadequate diet, possibly combined with repeat infections and poor child care.[25] The median prevalence of stunting in the 65 *Countdown* countries with data from 2009 or later is 32% and ranges from 9% in China to 58% in Burundi. Some 38 countries have a stunting prevalence of at least 30%.

Previous *Countdown* analyses have shown that stunting is concentrated among the poor and among children whose mothers have low levels of education.[26] Stunting also tends to be much more common in rural areas (figure 1). Some 43 *Countdown* countries have a wasting prevalence of 5% or higher, with a high of 23%. Wasting is a marker of acute malnutrition and can change rapidly by season and following catastrophic impacts such as natural or human-caused disasters.[27]

Intervention coverage is still too low for many interventions—and it matters!

Tracking intervention coverage—the proportion of a population in need of an intervention that actually receives it—is central to accountability. It provides information on how well countries are successfully implementing policies and programmes aimed at improving women's and children's health. Low coverage of proven interventions and large disparities in coverage across population groups should spark immediate action.

Most high-impact interventions and service contacts monitored by *Countdown* show unacceptably low coverage, with enormous ranges across countries around the median for *Countdown* countries (figure 2, table 2).[28] Even interventions for preventing malaria, which have shown greater accelerations in coverage than any other indicators in recent years,[29] are far from their full life-saving potential. In endemic countries

FIGURE 2
Coverage of interventions varies across the continuum of care

Median national coverage of select interventions, 75 *Countdown* countries, most recent survey, 2009 or later (%)   ● Country reporting data
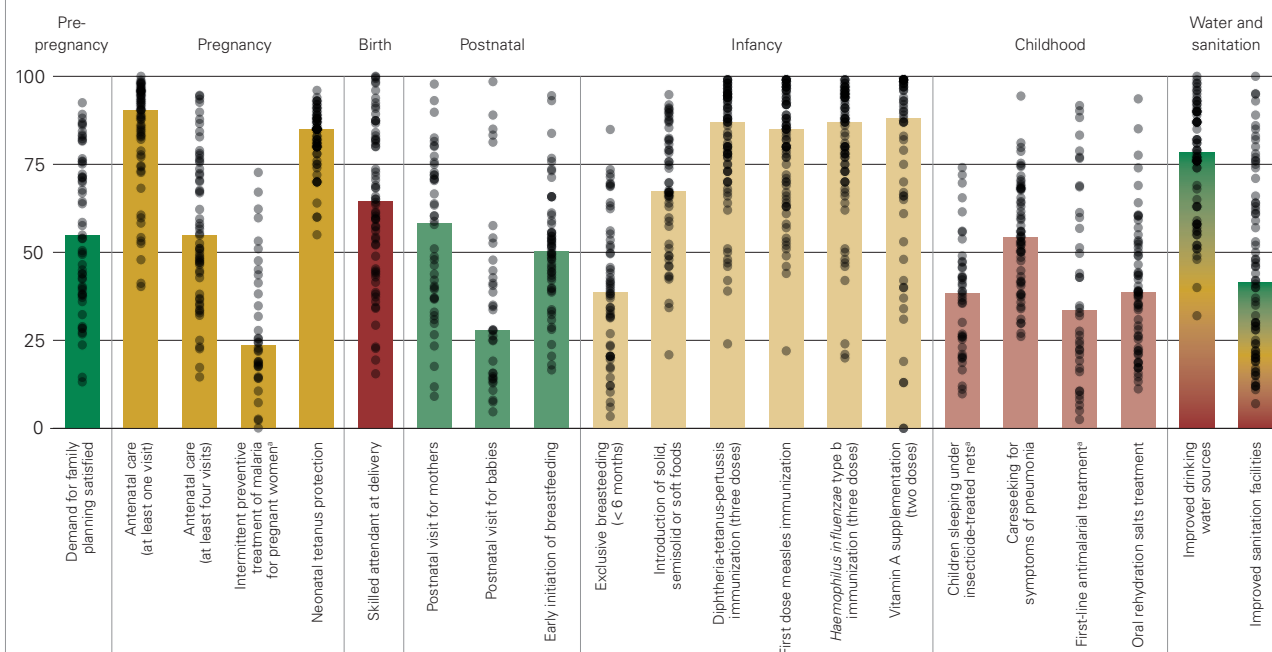
Note: Figure excludes data on Rwanda for 2014–15.

a. Analysis is restricted to countries where at least 75% of the population is at risk of malaria and where a substantial proportion (50% or more) of malaria cases is due to *Plasmodium falciparum* (*n* = 44) or where 50–74% of the population is at risk of malaria and where a substantial proportion (50% or more) of malaria cases is due to *P. falciparum* (*n* = 8).

Source: Immunization rates, World Health Organization (WHO) and United Nations Children's Fund (UNICEF); postnatal visit for mothers and postnatal visits for babies, Saving Newborn Lives analysis of Demographic and Health Surveys and Multiple Indicator Cluster Surveys; improved water and sanitation, WHO and UNICEF Joint Monitoring Programme for Water Supply and Sanitation; all other indicators, UNICEF global database, July 2015, based on Demographic and Health Surveys, Multiple Indicator Cluster Surveys and other national surveys.

TABLE 2
National coverage of *Countdown* interventions, most recent data, 2009 or later

Indicator	Number of countries with data	Median coverage (%)	Range (%)	Low country	High country
Pre-pregnancy					
Demand for family planning satisfied	57	55	13–93	South Sudan	Viet Nam
Pregnancy					
Antenatal care (at least one visit)	64	90	40–100	South Sudan	Democratic People's Republic of Korea
Antenatal care (at least four visits)	59	55	15–95	Afghanistan	Kyrgyzstan
Intermittent preventive treatment of malaria for pregnant women[a]	36	24	0.1–73	Burundi	Zambia
Neonatal tetanus protection	67	85	55–96	Nigeria	Bangladesh
Birth					
Skilled attendant at delivery	66	65	16–100	Ethiopia	China, Democratic People's Republic of Korea
Postnatal					
Postnatal visit for mothers	44	58	9–98	Mauritania	Kyrgyzstan
Postnatal visit for babies	35	28	5–99	Rwanda	Kyrgyzstan
Early initiation of breastfeeding	57	50	17–95	Guinea	Malawi
Infancy					
Exclusive breastfeeding (< 6 months)	56	39	3–85	Chad	Rwanda
Introduction of solid, semisolid or soft foods	52	67	21–95	South Sudan	Mexico
Diphtheria-tetanus-pertussis (three doses)	75	87	24–99	Equatorial Guinea	China, Morocco, Rwanda, Uzbekistan
First dose measles immunization	75	85	22–99	South Sudan	China, Democratic People's Republic of Korea, Morocco, Turkmenistan, United Republic of Tanzania, Uzbekistan
Haemophilus influenzae type b immunization (three doses)	73	87	20–99	India	Morocco, Rwanda, Uzbekistan
Pneumococcal conjugate vaccine (three doses)[b]	45	78	2–99	Côte d'Ivoire	Rwanda
Rotavirus immunization[b]	35	63	1–99	Philippines	Bolivia
Vitamin A supplementation (two doses)	53	88	0–99	Rwanda, Sudan	Benin, Burkina Faso, Cameroon, Côte d'Ivoire, Mauritania, Mozambique, Nepal, Senegal, Sierra Leone, Uzbekistan
Childhood					
Children sleeping under insecticide-treated nets[a]	42	38	10–74	Chad	Rwanda
Careseeking for symptoms of pneumonia	61	54	26–94	Chad	Djibouti
First-line antimalarial treatment[a]	38	34	3–92	Chad	Rwanda
Oral rehydration salts treatment	61	39	11–94	Mali	Djibouti
Oral rehydration therapy with continued feeding[b]	54	48	12–67	Sudan	Kyrgyzstan
Water and sanitation					
Improved drinking water sources (total)	74	79	32–100	Somalia	Democratic People's Republic of Korea
Improved sanitation facilities (total)	74	42	7–100	South Sudan	Uzbekistan
Composite Coverage Index					
Composite Coverage Index[b,c]	54	64	31–89	South Sudan	Democratic People's Republic of Korea

a. Analysis is restricted to countries where at least 75% of the population is at risk of malaria and where a substantial proportion (50% or more) of malaria cases is due to *Plasmodium falciparum* (*n* = 44) or where 50–74% of the population is at risk of malaria and where a substantial proportion (50% or more) of malaria cases is due to *P. falciparum* (*n* = 8).

b. Indicator is not included in figure 2.

c. The Composite Coverage Index is a weighted average of eight interventions along the continuum of care that have been available in most countries for at least a decade. The interventions include demand for family planning satisfied, at least one antenatal care visit, skilled attendant at delivery, three immunization indicators (diphtheria-tetanus-pertussis, tuberculosis and first-dose measles), oral rehydration therapy for diarrhea and care-seeking for pneumonia. It is calculated as

$$CCI = ¼ \left(FPS + \frac{SBA + ANCS}{2} + \frac{2DPT3 + MSL + BCG}{4} + \frac{ORT + CPNM}{2} \right).$$

This summary indicator used in Countdown's routine reporting covers reproductive, maternal and newborn health, as well as both preventive and curative interventions.

Note: Table excludes data on Rwanda for 2014–15. Bolded indicators are those recommended by the Commission on Information and Accountability for Women's and Children's Health.

Source: Immunization rates, World Health Organization (WHO) and United Nations Children's Fund (UNICEF); postnatal visit for mothers and postnatal visits for babies, Saving Newborn Lives analysis of Demographic and Health Surveys and Multiple Indicator Cluster Surveys; improved water and sanitation, WHO and UNICEF Joint Monitoring Programme for Water Supply and Sanitation; all other indicators, UNICEF global database, July 2015, based on Demographic and Health Surveys, Multiple Indicator Cluster Surveys and other national surveys.

Countdown to 2015: A Decade of Tracking Progress for Maternal, Newborn and Child Survival *The 2015 Report*

with available data, only 24% of women report receiving malaria prevention during pregnancy, and only 38% of children under age 5 were reported to be sleeping under an insecticide-treated net. Treatment interventions for the major killers of children are still reaching fewer than half of children with malaria or diarrhoea, and only 54% of children with symptoms of pneumonia are taken outside the home for care. Immunizations continue to be an exception, with median coverage generally above 85%, although these interventions —like all others—show high variation across countries.

The coverage indicators tracked by *Countdown* have evolved in response to changes in clinical recommendations and advances in coverage measurement. For example, indicators for rotavirus vaccine and pneumococcal conjugate vaccine were added in 2014 because of increased data availability following rapid policy adoption. Antibiotic treatment for childhood pneumonia is no longer tracked because validation studies have shown that it cannot be accurately measured by household surveys.[30] The indicator on oral rehydration therapy (oral rehydration solution or increased fluids and continued feeding) has been retained to allow the examination of trends and because it is a component of the Composite Coverage Index used by *Countdown*.[31] However, World Health Organization (WHO)/United Nations Children's Fund guidelines now recommend oral rehydration solution and zinc, so it will be important to track coverage for both going forward. In 2015, 37 countries had available data from population-based national surveys on the administration of zinc for treatment of childhood diarrhoea. The median coverage reported by these countries was 1%, with a high of 28% in Malawi.[32]

Figure 2 and table 2 reflect data from more countries than in previous years for all indicators measured through household surveys. The number of countries with population-based estimates of coverage for postnatal care visits for babies increased from 5 during 2000–06[33] to 35 during 2009–14. The rapid expansion of international household surveys during the Millennium Development Goals period has helped ensure that all countries have recent, high-quality data on coverage for high-impact interventions to guide their programmes and policies.[34]

Understanding country progress in reaching all population groups with needed services requires analysing changes in coverage over time. Trends in intervention coverage were featured in an earlier

Countdown publication[35] and are updated in table 3 for countries with available data in both periods. Three broad patterns are evident:

- Key malaria and HIV interventions began at low coverage and increased markedly. The three malaria interventions that started below 20% in the earlier period showed substantial increases. HIV interventions are not shown in table 3 because baseline data were not available due to methodological changes, but the prevention of mother-to-child transmission with antiretrovirals increased from near zero to 53% in the most recent period, with a range of 1% to more than 95% across countries with data.

- Some interventions, which already showed high coverage by around 2000, increased modestly in absolute terms, partly because there was limited scope for increase. These include at least one antenatal care visit, access to an improved source of drinking water and the three vaccines (diphtheria-tetanus-pertussis, *Haemophilus influenzae* type B and first-dose measles). Nevertheless, a substantial proportion of the gap was closed for these interventions.

- All other interventions studied had coverage below 60% before 2009 and increased 10 percentage points or less: family planning, four or more antenatal care visits, skilled attendant at delivery, access to an improved sanitation facility, exclusive breastfeeding and case management interventions for diarrhoea and pneumonia.

These patterns suggest that rapid coverage increases are possible when interventions are prioritized and sufficiently funded, as for malaria or HIV. However, there was very limited progress for interventions that require multiple service contacts along the continuum of care or access to care 24/7, particularly during pregnancy and childbirth, and for the management of childhood diarrhoea and pneumonia.

Interpreting these summary measures and trends and assessing whether countries are achieving meaningful coverage gains require consideration of uncertainty around the estimates. The *Countdown* Coverage Technical Working Group is undertaking analytical work on this topic as part of its efforts to improve coverage measurement and to communicate clear actionable messages to decisionmakers (box 4).

Intervention coverage is closely related to maternal, newborn and child survival. Faster rates

TABLE 3

Changes in national coverage of *Countdown* interventions from 2000–2008 to 2009–2014 for countries with available data in both periods, by proportion of the coverage gap closed

Indicator	Number of countries with data	Median coverage[a] (%)		Change (percentage points)	Proportion of gap closed (%)
		2000–2008	2009–2014		
Haemophilus influenzae type b immunization (three doses)[b]	13	84	95	11	69
Diphtheria-tetanus-pertussis immunization (three doses)[b]	74	77	88	11	47
First dose measles immunization[b]	71	76	85	9	38
First-line antimalarial treatment[c]	21	8	43	35	38
Antenatal care (at least one visit)	63	85	90	6	36
Children sleeping under insecticide treated nets[c]	38	16	40	24	29
Vitamin A supplementation (two doses)	47	86	90	4	29
Improved drinking water sources[d]	73	73	79	6	22
Demand for family planning satisfied	43	54	64	10	21
Skilled attendant at delivery	66	55	65	9	21
Intermittent preventive treatment of for malaria during pregnancy[c]	26	7	25	18	19
Exclusive breastfeeding (< 6 months)	58	33	41	9	13
Careseeking for symptoms of pneumonia	57	48	54	6	12
Antenatal care (at least four visits)	44	50	56	6	12
Oral rehydration salts treatment	58	30	38	8	11
Oral rehydration therapy with continued feeding	49	42	48	6	10
Improved sanitation facilities	73	38	42[e]	4	6

a. Data are for the most recent year available during the period specified.

b. Data are for the midpoint of each period (2004 and 2012).

c. Analysis is restricted to countries where at least 75% of the population is at risk of malaria and where a substantial proportion (50% or more) of malaria cases is due to *Plasmodium falciparum* (*n* = 44) or where 50–74% of the population is at risk of malaria and where a substantial proportion (50% or more) of malaria cases is due to *P. falciparum* (*n* = 8).

d. Includes data for 2015.

Note: Table includes only indicators for which trend data are available in the global data sets shared by the United Nations Children's Fund (UNICEF), July 2015. Table excludes data on Rwanda for 2014–15.

Source: Immunization rates, World Health Organization (WHO) and UNICEF; improved water and sanitation, WHO and UNICEF Joint Monitoring Programme for Water Supply and Sanitation; all other indicators, UNICEF global database, July 2015, based on Demographic and Health Surveys, Multiple Indicator Cluster Surveys and other national surveys.

of improvement in coverage have an impact on under-five mortality. For 29 countries with two or more surveys at least four years apart between 2000 and 2014 an annual increase of 1% in the Composite Coverage Index was associated with a decrease of 0.59% in the under-five mortality rate, after adjusting for changes in gross national product per capita and the baseline under-five mortality rate (95% confidence interval: 0.02%, 1.14%; P = 0.042; figure 3).

Despite considerable progress, important gaps remain in the availability and frequency of coverage data collected through household surveys. For example, the results in figure 3 could be calculated for only 29 of the 75 *Countdown* countries. Among these, the fastest increases in the Composite Coverage Index were observed for Cambodia, Ethiopia, Rwanda and Burkina Faso, and the slowest for Mozambique, Cameroon,

Guinea and Benin. Box 5 shows the evolution of data availability, using coverage of skilled attendant at delivery as an example.

There are also technical limitations in the methods used to measure intervention coverage. For example, there is no guarantee that women and children who report a service contact actually receive the full complement of life-saving interventions that could and should be delivered during that contact. Reported coverage for antenatal care, postnatal care for mothers and babies, and skilled attendant at delivery therefore represent best case scenarios for actual coverage of interventions.[36] Redoubled efforts are needed to ensure that all women and children are in contact with health services and that those services include the delivery of life-saving interventions of sufficient quality. New secondary analyses of antenatal care patterns in

What constitutes a meaningful change in coverage of maternal, newborn and child health interventions?

The *Countdown* Coverage Technical Working Group and the United Nations Children's Fund Data and Analytics team are addressing whether changes in aggregate median estimates across countries over time are meaningful in public health terms and sufficiently robust to guide decisionmaking on policies, programmes and investments and whether there is a standardized way to present uncertainty around these estimates that will improve the scientific basis for their interpretation. They are conducting a set of analyses using average coverage rates instead of median coverage rates as a basis for developing confidence intervals around each estimate.

Their work has yielded three features of data aggregation and assessment of change that should be considered when interpreting *Countdown* coverage estimates and trends:

- *Measures of uncertainty are essential.* Changes in the coverage of health interventions are better interpreted with some measure of uncertainty around the estimates, generally represented by a 95% confidence interval. Without a confidence interval, it is impossible to determine whether observed changes reflect real improvements or are an artefact of the random sampling procedure. Fortunately, sampling errors decrease when averages are computed using data from many countries because the aggregate coverage estimate can be thought of as based on pooled independent samples from all countries, which results in a large sample size and therefore better precision. Figure 1 shows changes in average coverage for four key indicators monitored by *Countdown* in 44 countries for which data were available during 2003–08 and 2009–14.[1] The confidence intervals are narrow for all four indicators, indicating that the estimates are very precise.[2] The results also show statistically significant increases in coverage for each indicator. Between the two time periods, coverage of at least one antenatal care visit increased 6 percentage points, skilled attendant at delivery 11 percentage points, oral rehydration solution for diarrhoea treatment 7 percentage points and careseeking for symptoms of acute respiratory infection 4 percentage points.
- *Aggregate measures based on multiple countries are more likely to show significant change than those based on one country.* Because aggregate measures are more efficient (smaller standard errors) than individual country estimates, it is possible to interpret

Figure 1. Narrow confidence intervals indicate that estimates are very precise

Average coverage of selected maternal and child health interventions for 44 *Countdown* countries, 2003–08 and 2009–14 (%) and 95% confidence intervals
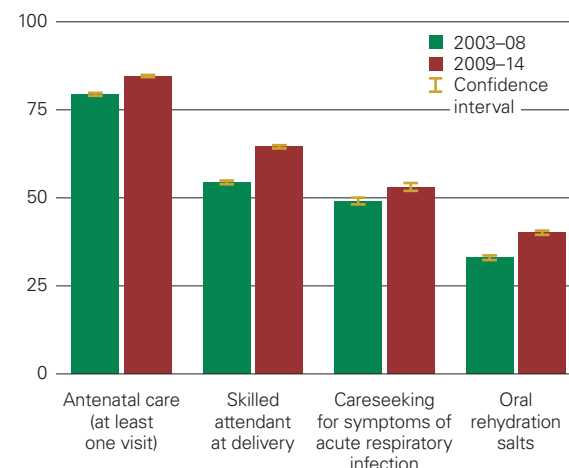
Source: United Nations Children's Fund analysis of data from Multiple Indicator Cluster Surveys and Demographic and Health Surveys.

a change in an aggregate measure as statistically significant even when the majority of countries in the analysis show no statistically significant improvement in the indicator of interest. Of the 44 countries included in the analysis in figure 1, 21 showed no statistically significant change in coverage of at least one antenatal care visit, and 2 showed a significant decrease. For skilled attendant at delivery, 15 countries showed no significant change in coverage, and 1 country showed a significant decline. For oral rehydration solution and symptoms of acute respiratory infection, more than half the countries did not show a statistically significant increase in coverage. These results indicate that caution is needed when applying the findings of the aggregate analyses to what is happening in individual countries.
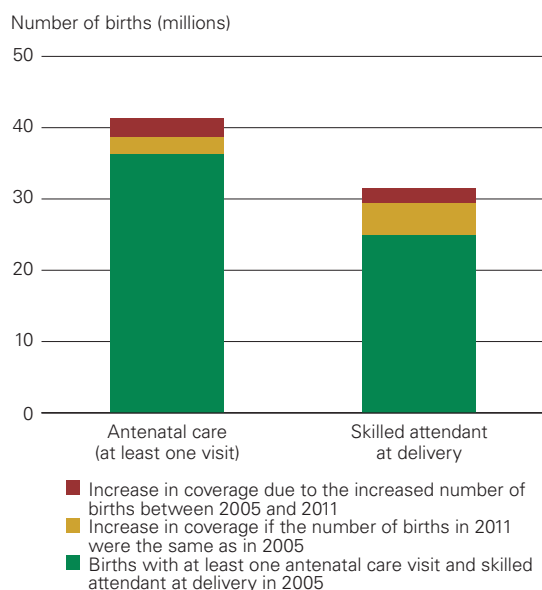- *Trends in aggregate coverage can conceal dramatic changes in absolute numbers of women and children receiving interventions.* To illustrate this point, the change in the number of annual births used to calculate coverage of at least one antenatal care visit and skilled attendant at delivery was estimated for the midyear of the two periods (2005 and 2011). Across the 44 countries in the analysis, the number of annual births increased from about 46 million in 2005 to 49 million in 2011 (figure 2).

(continued)

What constitutes a meaningful change in coverage of maternal, newborn and child health intervention?

Figure 2. Trends in aggregate coverage can conceal dramatic changes in absolute numbers of services provided

Number of births (millions)

■ Increase in coverage due to the increased number of births between 2005 and 2011
■ Increase in coverage if the number of births in 2011 were the same as in 2005
■ Births with at least one antenatal care visit and skilled attendant at delivery in 2005

Source: United Nations Children's Fund analysis of data from Multiple Indicator Cluster Surveys and Demographic and Health Surveys as well as data on births from UNDESA (2013).

Thus, although average coverage of at least one antenatal care visit increased only 6 percentage points, the absolute number of women receiving at least one antenatal care visit increased by about 5 million. Similarly, the number of women with a skilled attendant at delivery increased by 6.5 million, an accomplishment that is masked when progress is assessed only by looking at the modest 11 percentage point increase in coverage. These results emphasize that population change must be taken in to consideration when interpreting coverage values and highlight how increases in population add pressure to health systems.

Given the welcome and increasing focus on accountability, the global community has a responsibility to inform policymakers about how to interpret and use statistical evidence. Tools like the *Countdown* country profiles should include confidence intervals where feasible and relevant and find ways to incorporate population dynamics in the interpretation of results.

Notes

1. The analysis presented here is different from the results shown in table 3 on trends in coverage of health interventions along the continuum of care because the analysis here is based on consecutive periods of six years (2003–08 and 2009–14) and on average coverage instead of median coverage.

2. 95% confidence intervals are based on sampling errors and do not incorporate any additional measurement error. The actual uncertainty around the coverage estimates may be wider.

---

seven *Countdown* countries reflect an effort to dig deeper into available survey data to understand what interventions pregnant women are actually receiving and where dropoffs in attendance occur in different contexts (box 6).

New approaches to measuring coverage for interventions that women are unable to accurately report on (that is, services provided around the time of birth when the majority of maternal and newborn deaths occur) during household survey interviews are being developed and tested and should help increase available data and stimulate efforts to improve the quality of service delivery.[37] Efforts to link household surveys and health facility survey data are under way in order to generate the data on service quality needed to monitor progress in reaching women and children with the care they need. *Countdown* has also undertaken a programme of secondary analysis to increase the use of household survey data (box 7).

FIGURE 3
Increases in coverage of high-impact interventions are associated with decreases in under-five mortality

Annual change in under-five mortality rate (%)

Annual change in Composite Coverage Index[a] (%)
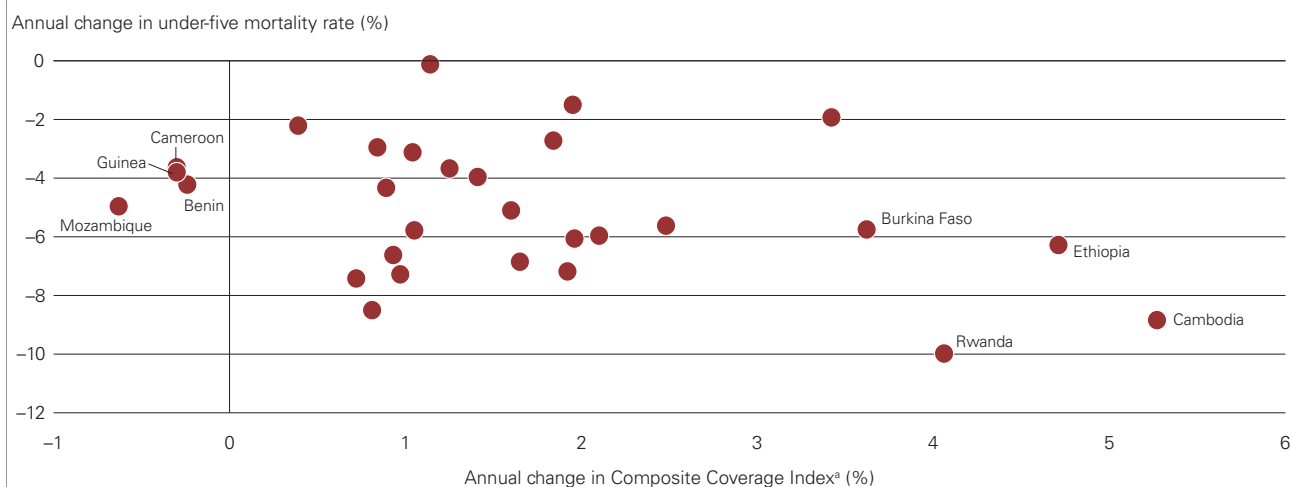
a. As calculated by the *Countdown* Equity Working Group.

Note: Data are for countries with two or more surveys during 2000–14. The Composite Coverage Index is a weighted average of eight interventions along the continuum of care.

Source: Re-analysis of Demographic and Health Survey and Multiple Indicator Cluster Survey data sets at the International Center for Equity in Health at the Federal University of Pelotas and estimates from the UN Inter-agency Group for Child Mortality Estimation.

BOX 5
Tracking progress in intervention coverage for reproductive, maternal, newborn and child health: more and better data

The past two decades have witnessed steady improvements in the availability of country-specific data on service contacts and intervention coverage for reproductive, maternal, newborn and child health. The maps in this box provide an example using the service contact indicator for skilled attendant at delivery. They show the availability of data and coverage for three periods. Two points are clear:
- More countries have available data than before 2000. Or, conversely, fewer countries have no data for the past decade on which to base assessments of progress.
- There has been steady progress, if slower than desired, in moving from lower coverage to higher coverage.

Important challenges remain. Countries need help from the global measurement community to move beyond tracking service contacts to assessments of coverage for specific interventions delivered during those service contacts. This is particularly urgent for interventions that mothers cannot report on accurately in household survey interviews and will require innovative measurement approaches that link reports of where care was sought to assessments of the readiness and quality of care provided in those settings.

The post-2015 landscape holds promise, focusing more attention and resources on ensuring that countries have the capacity to develop and implement sound measurement approaches and the commitment to use the resulting information to improve their programmes.
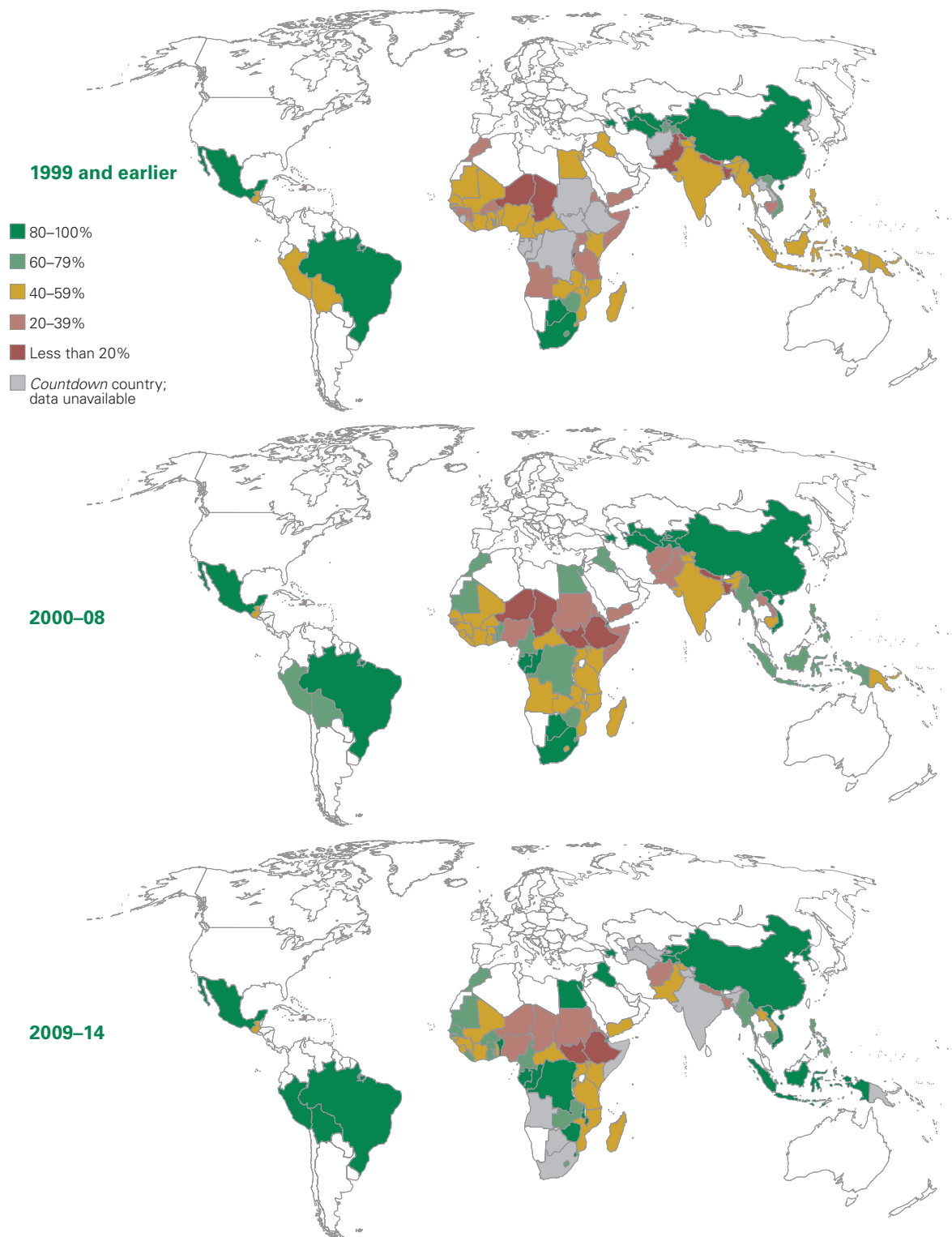
(continued)

BOX 5 (CONTINUED)

Tracking progress in intervention coverage for reproductive, maternal, newborn and child health: more and better data

More countries have available data on skilled attendant at delivery than before 2000, and there has been steady progress in moving from lower coverage to higher coverage

Coverage of skilled attendant at delivery in Countdown countries, 1999 and earlier, 2000–08, and 2009–14 (%)

1999 and earlier

- 80–100%
- 60–79%
- 40–59%
- 20–39%
- Less than 20%
- *Countdown* country; data unavailable

2000–08

2009–14

Note: Maps include data on Rwanda for 2014–15.

Source: United Nations Children's Fund global database, July 2015, based on Demographic and Health Surveys, Multiple Indicator Cluster Surveys and other national surveys.

Unpacking coverage for antenatal care visits: capturing information on services actually provided

Antenatal care is critical for improving maternal and newborn health.[1] The World Health Organization recommends that pregnant women complete at least four antenatal care visits.[2] *Countdown* and other global monitoring efforts track the proportion of women who complete one or more visits to a skilled provider and four or more visits to any provider. This box discusses antenatal care use patterns in seven *Countdown* countries. It uses Demographic and Health Survey data to analyse the frequency of antenatal care use by provider and interventions received and by three dimensions of inequality (household wealth quintiles, women's education and place of residence). It also uses multivariate analysis to identify determinants of use and reviews contextual data on antenatal care–related policies, guidelines and programmes.

Women generally reported at least one antenatal care visit to a skilled provider, except in Bangladesh and Nepal (see figure). A noticeable drop-off between three and four visits was visible in Senegal and Uganda.

The content of visits—that is, the types of interventions or procedures women reported receiving (such as blood sample taken, blood pressure taken and being told about pregnancy complications)—was also examined. More content was reported among women who had four or more visits than among women who reported one to three visits, but coverage was far from universal for the specific interventions examined, even in countries with high use. Analyses of country-specific inequalities indicated large disparities in antenatal care use by household wealth, women's education and residence, except in Peru and Uganda. As the number of visits increases to four or more, the disparities within each dimension of inequality widen, albeit at a different pace in each country. The multivariate analysis results showed a strong, significant positive association between both woman's education and seeking four or more antenatal care visits and between household wealth and seeking four or more antenatal care visits. Gestational age at first visit and parity were significantly negatively associated with seeking four or more visits.

Improving maternal and newborn health remains an important priority in the move to the post-2015 era. More concentrated efforts are needed to achieve full, equitable and sustained coverage of antenatal care. In-country quantitative and qualitative assessments are necessary to identify underserved women and the reasons behind low antenatal care use.

Notes
1. USAID 2015.
2. WHO 2007b.

Wide variations across and within countries on the number of antenatal care visits women report completing

Cumulative distribution of antenatal care visits by skilled and unskilled provider for the most recent birth (% of women who gave birth during the five years preceding the survey)

■ Unskilled provider
■ Skilled provider
⌐ Relative decline in coverage of visits

Bangladesh
Number of antenatal care visits

Cambodia
Number of antenatal care visits
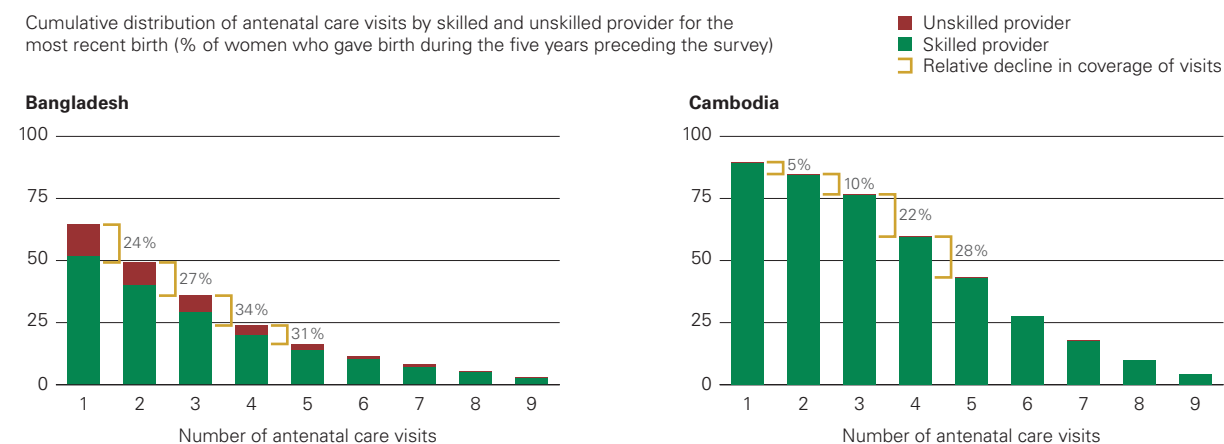
*(continued)*

BOX 6 (CONTINUED)
Unpacking use of antenatal care

Wide variations across and within countries on the number of antenatal care visits women report completing (continued)

Cumulative distribution of antenatal care visits by skilled and unskilled provider for the most recent birth (% of women who gave birth during the five years preceding the survey)

■ Unskilled provider
■ Skilled provider
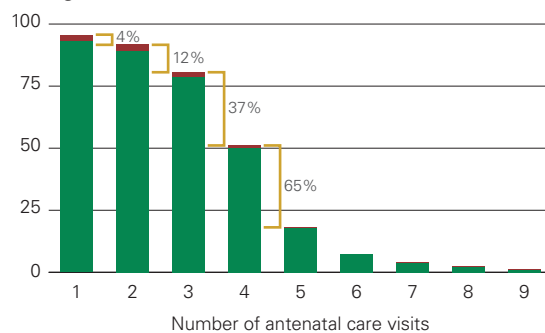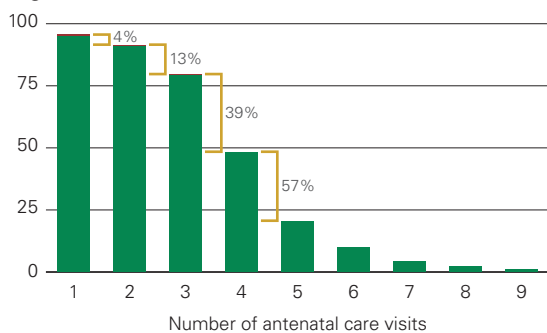⌐ Relative decline in coverage of visits

Cameroon

Number of antenatal care visits

Nepal

Number of antenatal care visits

Peru

Number of antenatal care visits

Senegal

Number of antenatal care visits

Uganda

Number of antenatal care visits
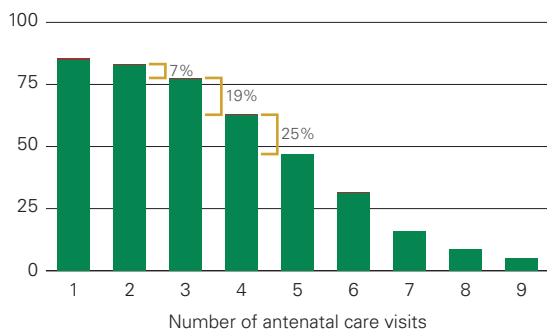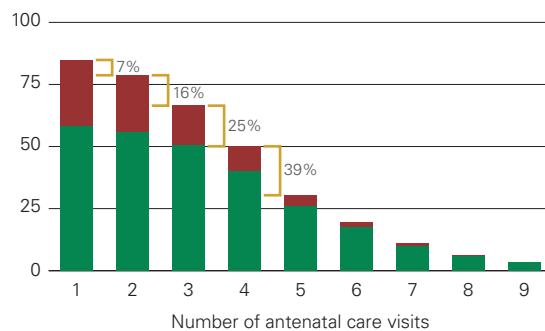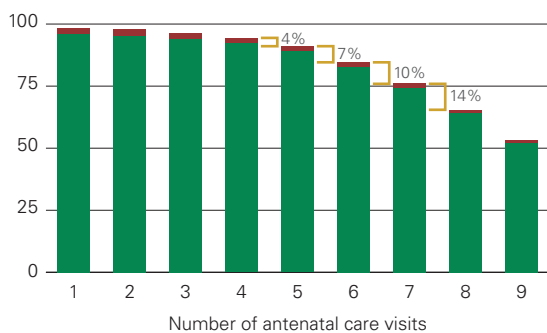
Source: Demographic and Health Surveys.

BOX 7

Targeted secondary analysis for stronger programmes: an example from management of childhood diarrhoea

Countdown strives to synthesize available data as a basis for promoting accountability and improving programmes. Too often, existing country datasets on intervention coverage are underused, with missed opportunities for programme-relevant analyses. Over the past two years, the *Countdown* Coverage Technical Working Group has engaged young investigators, including those from low- and middle-income countries, in secondary analyses projects focused on specific questions related to coverage of high-impact interventions. The priority analysis topics, arrived at through a consultative process involving all working group members, are antenatal care, led by researchers at the American University of Beirut (see box 6); family planning, led by the United Nations Population Fund and the Lives Saved Tool team based at Johns Hopkins University; and diarrhoea case management, led by the United Nations Children's Fund and the Coverage Technical Working Group support team based at Johns Hopkins University.

One aim of this work is to increase the engagement of young scientists in making full use of national household surveys, complemented by focused documentation efforts where appropriate. This box reports the results of the secondary analyses of diarrhoea case management, as an example:

- *Systematic reviews point to gaps in the evidence base.* A systematic review of English language literature published since 1990 found numerous studies documenting the prevalence of harmful practices in diarrhoea case management, including the restriction of fluids and food during diarrhoea episodes. These practices can result in treatment failure, sustained nutritional deficits and increased mortality due to diarrhoea. This suggests that programme action is needed, but the evidence base is flawed by a lack of consistency in sampling, measurement and reporting across studies and over time.[1]
- *Cross-country analyses highlight important needs for a broader programme focus.* National survey data were used to quantify the extent of fluid curtailment in children with diarrhoea in six high–diarrhoea burden *Countdown* countries in Sub-Saharan Africa. The results were alarming. Fluid curtailment was reported by 55% of caregivers in Nigeria, 49% in Ethiopia, 44% in Uganda, 37% in Tanzania, 36% in the Democratic Republic of Congo

and 32% in Burkina Faso. Children whose fluids were curtailed were also 3.51 (95% confidence interval: 2.66, 4.64) times more likely to have food withheld during the diarrhoea episode. Particularly at risk were children whose mothers were poor or had little education, rural children, children taken to nongovernment providers for care and children who were breastfed.[2]

- *Follow-up analyses provide information needed to target effective programmes.* Since the first set of analyses showed that even children with diarrhoea who were taken for care to public health facilities were often unlikely to receive appropriate treatment, the set of countries was expanded from 6 to 12, and patterns of treatment were examined by type of provider. Case management practices were defined as "good," "fair" or "poor" using World Health Organization/United Nations Children's Fund guidelines (see table). Children with diarrhoea for whom no care was sought outside the home were also considered. Programme efforts related to diarrhoea case management in each country were documented in collaboration with United Nations Children's Fund health staff.

The reported prevalence of good diarrhoea management is low and variable across countries, ranging from 17% in Côte d'Ivoire to 67% in Sierra Leone. Even among children taken for care to health facilities, the median prevalence of good management was 52% (ranging from 34% to 64%). The odds of a child receiving good diarrhoea management were equivalent for community versus

Definitions of "good", "fair" and "poor" diarrhoea case management practices, as used in this analysis

Practice	Oral rehydration salts or oral rehydration salts and zinc	Increased fluids	Continued feeding
Good	Yes	Yes	Yes
Good	Yes	Yes	No
Good	Yes	No	Yes
Fair	Yes	No	No
Fair[a]	No	Yes	Yes
Fair[a]	No	Yes	No
Poor	No	No	Yes
Poor	No	No	No

a. Defined as good practice for children ages 6 months and younger.

(continued)

BOX 7 (CONTINUED)
Targeted secondary analysis for stronger programmes: an example from management of childhood diarrhoea

facility providers in six countries and higher for community providers than for facility providers in Niger and Uganda. The figure shows summary results by type of provider.

Diarrhoea has always been—and continues to be—an important cause of death among children under age 5. The programme of secondary analyses carried out by the Coverage Technical Working Group has provided new evidence that will help country programmes improve their supply-side efforts to train health workers, strengthen community case management where appropriate and ensure continuous availability of oral rehydration solutions and zinc and to complement these efforts with direct efforts to reduce harmful family practices and promote appropriate careseeking and management for childhood diarrhoea.

More broadly, this work underscores the importance of making full use of available datasets to generate programme-relevant results. Building capacity for the analysis of coverage data among young scientists from low- and middle-income countries is an urgent priority.

Notes

1. Carter and others 2015.
2. Perin and others 2015.

The reported prevalence of good diarrhoea management is low and variable across countries, even among children taken for care to health facilities

Children ages 0–59 months with diarrhoea (%)
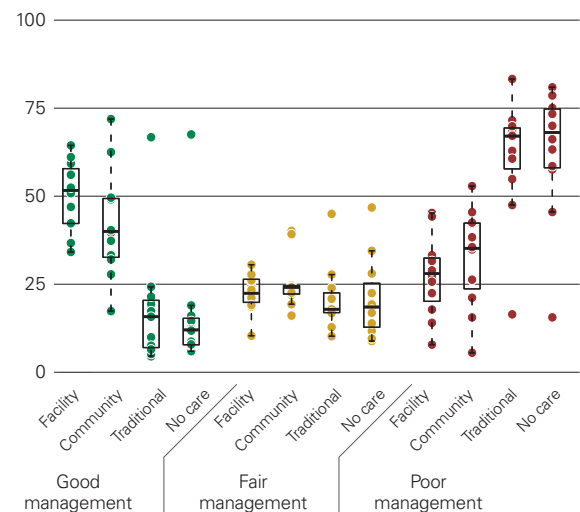
Source: Re-analysis of Demographic and Health Surveys conducted since 2009.