Appendix to

Countdown to 2030 Collaborators. Tracking progress towards universal coverage for reproductive, maternal, newborn, child and adolescents' health.

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Appendix A.   Countdown to 2030: Data Sources and Technical Review Process – 2016-2017

Data Sources

Most coverage, equity and nutrition data come from standardized population-based surveys (Demographic and Health Surveys, Multiple Indicator Cluster Surveys, and other nationally representative surveys that meet data quality standards). Mortality data are provided by United Nation's sources and academic collaborations.   The Countdown relies upon WHO global databases on policies, health workforce and financing indicators for many of the drivers related analyses. Data on availability of emergency obstetric care comes from UNFPA and the Averting Maternal Death and Disability program, and the legal status of abortion data is from the UN Population Division database for 2015.

Technical Review Process

Countdown to 2030 builds on the 12 years of monitoring experience of Countdown to 2015. It aims to provide the best and most recent scientific evidence on country-level progress towards improving women's, children's and adolescents' health[1], and to improve the use of national data to accelerate attention, accountability and action for scaling up coverage of priority reproductive, maternal, newborn, child, adolescent health and nutrition (RMNCAH&N) interventions.

Countdown adds value to global and country accountability efforts by forging a clear, evidence-based consensus on priority interventions for RMNCAH &N and on key coverage determinants. This consensus is achieved through a rigorous annual technical review process which enables the Countdown partnership to: 1) re-assess its indicator list in response to changes in the evidence base on effective interventions and changes in country priorities, 2) examine the range of equity analyses including stratifiers, 3) to ensure its monitoring efforts are harmonized with other major global, regional and country accountability initiatives, and 4) review the priority country list based on country progress and global and country targets and goals.

Countdown has completed the technical review process for the 2016-2017 reporting year which resulted in updated decisions about the Countdown indicator list, equity analyses, and priority countries.   Countdown will continue to produce country profiles populated with an agreed upon core set of indicators, equity specific profiles, and regular reports that summarize data across the Countdown countries.

Countdown priority countries

1.   Background: country selection during Countdown to 2015 took place in three phases:

- Phase 1. In 2004, Countdown defined a list that included all countries with at least 50,000 child deaths and all countries with an under-five mortality rate of at least 90 deaths per 100,000 live births. The resulting list of 60 priority countries, which were profiled in the 2005 Countdown Report, represented almost 500 million children under age five — more than 75% of all such children then living — and represented 94% of all child deaths.
- Phase 2. For the 2008 Countdown Report, the list was expanded to include those countries with the highest maternal mortality ratios (all countries with an MMR of more than 550 deaths per 100,000 live births) or highest numbers of maternal deaths (all countries with at least 750

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[1] Countdown's focus on adolescents is currently centered on reproductive and maternal health of adolescent girls.

maternal deaths, and an MMR of more than 200). Because countries with high child mortality overlapped significantly with those that had high maternal mortality, this exercise led to the inclusion of only eight additional Countdown priority countries. This list of 68 countries was also used in the 2010 Countdown Decade Report.

- In 2011, with Countdown's agreement to take responsibility for major parts of the follow-up agenda of the Commission for Information and Accountability for Women's and Children's Health, Countdown's list of priority countries was again expanded to 75 countries. The 75 countries included the 68 high-burden countries described above as well any of the 49 low-income countries discussed in the first Global Strategy for Women's and Children's Health not previously included. Between 2012 and 2015, Countdown produced annual reports and analyses of country-specific information on key indicators for each of these 75 countries.

2. Countdown to 2030, country selection for 2017:

The process for selecting the country list for 2017 was in keeping with the evidence-based process used during Countdown to 2015. It involved reviewing the criteria for country selection used in Countdown to 2015, assessing country levels and trends of maternal, newborn and child mortality (as well as absolute numbers of deaths), and taking into consideration country lists used in other major global initiatives (i.e., SDG, GFF, FP2020, GS 2.0, GNR, etc.).

Countdown has:

1. Prioritized a set of 81 countries based on maternal, newborn, and child mortality burden. The full 2-page country profiles will be prepared for each of these countries.
2. Identified a sub-set of core indicators for all of the world's countries, including high income countries (e.g., mortality, stillbirths, fertility, vaccine indicators, etc.).
3. Started work on preparing special profiles for conflict-affected countries/fragile states, some of which are not included as part of the list of 81 countries.

Countdown to 2030 used the following criteria to select the 81 priority countries:

1. Exclusion of high mortality countries with less than 500,000 population in 2015
2. Countries with U5MR > 25 per 1,000 live births and/or MMR > 70 per 100,000 live births *
3. Compatibility with other agency lists: low or middle-income countries; IDA countries; GFF priority countries; other lists

The application of these criteria resulted in three country groupings (see figure):

- Group 1 countries: 53 (51 were CD2015 countries) countries with a U5MR and/or MMR above the SDG target and included in countries accounting for 95% of all U5 or maternal deaths
- Group 2 countries: 28 countries (17 were in CD2015) with a U5MR and/or MMR above the SDG target but NOT included in countries accounting for 95% of all U5 or maternal deaths
- Group 3 countries: 9 countries (of which 6 were in CD2015) with a U5MR and MMR below the target but included in countries accounting for 95% of all U5 or maternal deaths. These countries are all upper-middle or high income countries.
- The final list of Countdown priority countries includes the countries in groups 1 and 2, resulting in a total of 81 countries. As noted above, Countdown is in the process of developing a template for country profiles specific to conflict affected countries.

- Countries previously included in Countdown to 2015 and that 'graduated' include: Brazil, China, Egypt, Peru, and Vietnam. Sao Tome e Principe was excluded because of its small population size. Newcomers to Countdown include: Algeria, Bhutan, Dominican Republic, Guyana, Honduras, Jamaica, Namibia, Nicaragua, Panama, Paraguay, Suriname, Timor-Leste and Venezuala.
- *We are aware that a MMR of 70 per 100,000 is a global target whereas a U5MR of 25 per 1,000 is a national target, but we opted to use these figures because they are recognized as SDG goals

Figure. Country lists, groups 1, 2 and 3 as part of the Countdown country selection process, 2017

	Group 1		Group 2	Group 3
	Afghanistan	Mali	Azerbaijan	Brazil
	Algeria	Mauritania	Bhutan	China
	Angola	Morocco	Botswana	Colombia
	Bangladesh	Mozambique	Comoros	Egypt, Arab Rep.
	Benin	Myanmar	Djibouti	Mexico
	Bolivia	Nepal	Dominican Republic	Peru
	Burkina Faso	Niger	Equatorial Guinea	Russian Federation
	Burundi	Nigeria	Gabon	United States
	Cambodia	Pakistan	Guatemala	Vietnam
Full list of	Cameroon	Papua New Guinea	Guinea-Bissau	
countries,	Central African Republic	Philippines	Guyana	
by group	Chad	Rwanda	Honduras	**CONFLICT COUNTRIES IN RED**
	Congo, Dem. Rep.	Senegal	Jamaica	
	Congo, Rep.	Sierra Leone	Korea, Dem. Rep.	
	Côte d'Ivoire	Somalia	Kyrgyz Republic	
	Eritrea	South Africa	Lao PDR	**OTHER CONFLICT COUNTRIES**
Also shows	Ethiopia	South Sudan	Lesotho	Bosnia & Herzegovina
conflict	Gambia, The	Sudan	Namibia	Kiribati
countries in	Ghana	Tanzania	Nicaragua	Kosovo
red font	Guinea	Togo	Panama	Libya
	Haiti	Uganda	Paraguay	Marshall Islands
	India	Venezuela, RB	Solomon Islands	Micronesia, FS
	Indonesia	Yemen, Rep.	Suriname	Syria
	Iraq	Zambia	Swaziland	Tuvalu
	Kenya	Zimbabwe	Tajikistan	West Bank & Gaza
	Liberia		Timor-Leste	
	Madagascar		Turkmenistan	
	Malawi		Uzbekistan	

Map of the Countdown countries

Figure. Map of the 81 Countdown countries, by availability of 7 key indicators, 2012 and later

Key indicators: 1. Demand for family planning satisfied with modern methods; 2. Skilled attendant at delivery; 3. Postnatal care for babies; 4. DTP3 immunization; 5. ORS for diarrhea treatment; 6. Exclusive breastfeeding; 7. Population using basic drinking water services

- 7 indicators available
- 5-6 indicators available
- 3-4 indicators available
- 0-2 indicators available
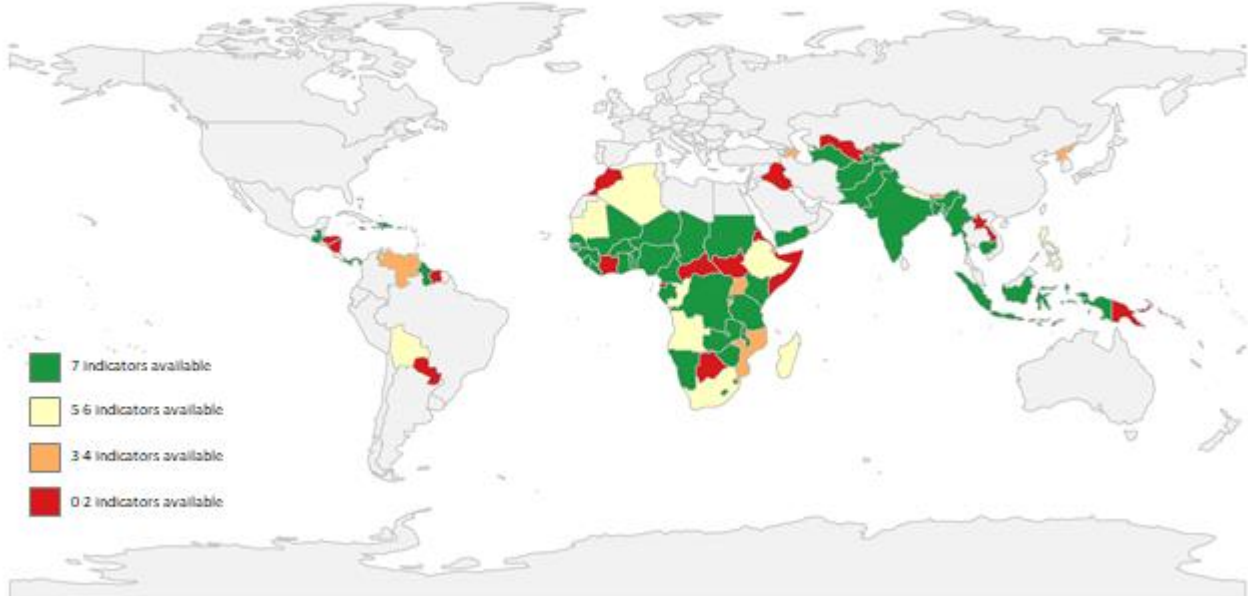
Countdown interventions and indicators

Countdown's selection of priority interventions and indicators is guided by the summary impact model (see below). The main focus of Countdown is coverage – the proportion of individuals needing a service or intervention who actually receive it. All interventions tracked through Countdown are scientifically proven to improve health and survival among mothers, newborn, children or adolescents. Coverage of service contact indicators, such as antenatal and postnatal care, childbirth, and family planning services also need to be tracked, as they provide the basic platform for delivery of multiple effective interventions. Ideally, Countdown will be able to increasingly track the actual content of care received during these service contacts as data becomes more available and as measurement improves. Countdown is focusing attention through the coverage technical working group on improving measures of effective coverage which take into consideration the quality and content of care. Selected indicators for Countdown's global monitoring activities (i.e., the profiles and global reports) include those that are valid, reliable, comparable across countries and time, nationally representative, and useful for policy makers and program managers.

The technical review process for 2017 provided an opportunity for Countdown to review and update the indicator list so that it reflects the latest evidence on effective interventions for RMNCAH&N. Countdown has agreed to continue to report on the full continuum of care, and to expand its analyses in the areas of reproductive and adolescent health and nutrition. This process took advantage of the extensive indicator consultations that have taken place in the recent past for developing the SDG framework, the Monitoring Framework for the Global Strategy for Women's, Children's, and Adolescent Health, and for other initiatives and efforts such as Every Newborn Action Plan (ENAP), Ending Preventable Maternal Mortality (EPMM), Global Nutrition Report (GNR), the Lancet Commission on Adolescent Health, FP2020, WHO list of 100 core indicators, Primary Health Care Performance Initiative, etc.

The 2017 technical review process proceeded in two phases. Phase 1 concerned the selection of the demographic and coverage indicators, and revision of the list of stratifiers used for the equity analyses. Phase 2 involved the selection of the determinants/drivers of coverage indicators (e.g., the health systems, policies, and financing indicators), which was dependent upon the finalization of the selection of the coverage and demographic indicators since they should be linked/on the same causal pathway.

In each phase, the following general steps were undertaken:

1. Mapping of indicators (creating separate files for demographic, coverage, and determinants/drivers indicators that show indicator lists by major global initiatives and how they overlap);
2. Creation of a matrix that includes details for each indicator such as numerator, denominator, and data sources;
3. Ranking/organizing the indicators into three tiers. In general, Tier 1 indicators are those that are included on the 2-page country profiles. Tier 2 indicators are complementary or additional to Tier 1 indicators and will be reported on the CD website only in the interactive version or 'dashboard' version of the country profiles. Tier 3 indicators capture information about proven interventions, but data is not yet readily available for them or they are still under development or aspirational;
4. Consultation with technical working group members and additional content area experts (i.e., experts working on WASH, nutrition, malaria, etc.) on the matrix and tiered ranking of the indicators;
5. Solicitation of feedback from the broader group of Countdown partners (all those with logos on the back of the 2015 report were invited to provide comments on the indicator lists and to submit proposals for changes to existing indicators or to add indicators)

6. Finalization of the list through consensus in the working groups and in the Technical Review Group

The final coverage, drivers and demographic indicator lists are presented by tier in the tables below.

Countdown to 2030 equity analyses

Decisions on the scope of the equity technical working group included:

Stratification of indicators by:

1. Wealth quintiles
2. Woman's education
3. Woman's age (current, at child's birth)
4. Urban/rural residence
5. Region of the country
6. Sex of child (relevant outcomes)

New stratifiers that the group is examining and using for specific analyses:

1. Ethnicity
2. Religion
3. Double stratification – wealth quintiles x urban/rural
4. Wealth deciles

The group disaggregates the following indicator (using the stratifiers listed above):

1. Coverage indicators
2. Nutritional status
3. Mortality (neonatal, infant, under-5)
4. Fertility (total, adolescent)

The equity technical working group is expanding its analyses to include:

1. Large set of new SDG indicators related to RMNCH and nutrition
2. Contraceptive use and FPC for modern methods and for sexually active women

Data sources and analysis

Households surveys, notably DHS and MICS, are the primary source of data for the coverage indicators. The estimates for the coverage indicators are based on analyses of statistics from UNICEF's global databases and WHO's Global Health Observatory by the Johns Hopkins Bloomberg School of Public Health's Institute for International Programs. The estimates for the disaggregated coverage indicators are based on analyses by the University of Pelotas' International Centre for Equity in Health.

The Countdown uses mortality and cause of death estimates from United Nations Interagency groups and academic collaborations for its analyses. The Countdown relies upon WHO global databases on policies, health workforce and financing indicators for many of the drivers related analyses. Data on availability of emergency obstetric care comes from UNFPA and the Averting Maternal Death and Disability program, and the legal status of abortion data is from the UN Population Division database for

2015. Analyses on official development assistance were done by the London School of Hygiene and Tropical Medicine based on data from the OECD Creditor Reporting System database.

Tables on the indicators selected by Countdown to 2030 for the 2017 reporting cycle

Table 1. Coverage indicators

	Tier 1	Tier 2	Tier 3
REPRODUCTIVE HEALTH	A1. Demand for family planning satisfied with modern methods	B1. Demand for family planning satisfied	C1. Cervical cancer screening for women 30-49 years
		B2. Contraceptive prevalence rate (CPR)	C2. Young men and women with basic knowledge of SRHR
		B3. Contraceptive prevalence rate, modern methods (mCPR)	
		B4. Unmet need for family planning	
		B5. Unmet need for modern contraception	
		B6. Family planning integration	
MATERNAL AND NEWBORN HEALTH	A2. Antenatal care (four or more visits)	B7. Antenatal care (at least one visit)	C3. Antenatal corticosteroid use
	A3. Intermittent preventive treatment for malaria during pregnancy	B8. Antenatal care (eight or more visits)	C4. Newborn resuscitation
	A4. Treatment of pregnant women living with HIV	B9. Antenatal care content	C5. Babies weighed at birth
	A5. Neonatal tetanus protection	B10. HIV+ pregnant women receiving ARVs for PMTCT	C6. Thermal care
	A6. Skilled attendant at delivery	B11. Institutional deliveries (total and disaggregated by sector (public/private)	C7. Kangaroo mother care
	A7. Caesarean section rate	B12. Postnatal care for mothers and babies	C8. Chlorhexidine cord cleansing
	A8. Postnatal care for mothers		C9. Treatment of neonatal sepsis
	A9. Postnantal care for babies		C10. Pregnant women screening for syphilis
			C11. Uterotonic immediately after birth
			C12. Content of postnatal care for mothers
			C13. Content of postnatal care for newborns
UNDER-5 CHILD HEALTH	A10. Immunization - Rota	B13. Careseeking for fever in children under-five	C14. Full immunization of children under-5
	A11. Immunization - DTP3	B14. Appropriate careseeking for diarrhoea, suspected pneumonia, or fever	C15. Appropriate treatment for malaria
	A12. Immunization - Hib3	B15. Malaria treatment - 1st line treatment	
	A13. Immunization - PCV3	B16. Diarrhoea treatment: Zinc	
	A14. Immunization - Measles		
	A15. Malaria prevention in children under-five - sleeping under ITNs		

	A16. Careseeking for symptoms of pneumonia		
	A17. Malaria diagnostics in children under-five		
	A18. Diarrhoea treatment: ORS		
	A19. Diarrhoea treatment - ORS + zinc		
ADOLESCENT HEALTH	A20. Demand for family planning satisfied with modern methods among adolescent women	B17. HIV testing for adolescents	C16. Human papilloma virus (HPV) vaccine coverage among adolescents
	A21. ANC4+ among adolescents	B18. HIV testing for adolescents with feedback	
	A22. Skilled attendant at delivery among adolescents		
	A23. Postnatal care for adolescent mothers		
NUTRITION	A24. Early initiation of breastfeeding	B19. Exclusive breastfeeding disaggregated by month	C17. Mothers who received counselling, support or messages on optimal breastfeeding at least once in the last year
	A25. Exclusive breastfeeding	B20. Continued breastfeeding (year 2)	C18. Prelacteal feeds
	A26. Continued breastfeeding (year 1)	B21. Introduction of solid, semi-solid or soft foods	C19. Households with available iodized salt
	A27. Minimum dietary diversity	B22. Minimum acceptable diet	C20. Severe acute malnutrition (SAM) geographical coverage
	A28. Vitamin A supplementation, full coverage	B23. Iron and folic acid supplements for pregnant women	
		B24. IIodized salt consumption	
CROSS-CUTTING THEMES: ENVIRONMENTAL INTERVENTIONS	A29. Population using basic drinking-water services	B25. Safe deposit of child feces	C21. Households using improved cooking stoves
	A30. Population using basic sanitation services	B26. Households using solid fuel for cooking	C22. Population with primary reliance on clean fuels and technology
	A31. Population with hand washing facilities with soap and water at home		
CROSS-CUTTING THEMES: HOUSEHOLD INTERVENTIONS	A32. Population sleeping under ITN or sleeping in a house sprayed by IRS	B27. Household ITN ownership	
		B28. Universal coverage of vector control	

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, based on Demographic and Health Surveys, Multiple Indicator Cluster Surveys and other national surveys.

Table 2. Demographic indicators

Indicator Map by Tier (red=CD2015 indicator)			
	Tier 1	Tier 2	Tier 3
Population	A1. Total population A2.Total under 5 population A3. Total adolescent (10-19) population A4. Completion rate, upper secondary education, females	B1. Urban population (%) B2. Proportion of urban pop living in slums, informal settlements or inadequate housing B3. GDP per capita (PPP) B4. Proportion of population below the international poverty line B5. Proportion of population below the national poverty line B6. Percentage of adolescent girls (15-19) of total females aged (15-49)	C1. Proportion of the rural population who live within 2 km of an all-season road
Fertility	A5. Births (000) A6. Total fertility rate A7. Adolescent (15-19 years) birth rate		C2. Adolescent (10-14) birth rate
Child protection	A8. Birth registration	B7. Percentage of women aged 20-24 years who gave birth before age 18 B8. Percentage of women aged 20-24 years old who were married or in union by 18 and by 15 years B9. Proportion of women and girls aged 15-49 who have undergone female genital mutilation/cutting	

Maternal Mortality	A9. Maternal mortality ratio (adjusted) A10. Causes of maternal death (regional) A11. Total maternal deaths A12. Lifetime risk of maternal deaths		C3. Maternal near miss ratio C4. Proportion of maternal deaths registered C5. Placeholder for morbidity, we are including prevalence of anemia (see nutritional status indicators) C6. % of maternal deaths among adolescents
Stillbirths and Child Mortality	A13. Neonatal mortality rate A14. Stillbirth rate A15. Neonatal deaths, as % of all <5 deaths A16. Under 5 mortality rate A17. Total under 5 deaths A18. Causes of under 5 deaths (includes details on causes of neonatal deaths as well)	B10. Infant mortality rate B11. Post neonatal child mortality rate B12: child mortality, 5-14 years of age or possibly just child mortality, 5-9yrs of age (if we are able to get estimates for 5-9 from IGME, we would then have U5MR, child aged 5-9, and adolescent aged 10-19)	C7. Proportion of child deaths registered C8. Intrapartum stillbirth rate C9. Preterm birth rate, prevalence C10. Small for gestational age, prevalence C11. Neontatal morbidity rates C12. Disability after neonatal conditions
Adolescent Mortality	A19. Adolescent (10-19) mortality rate, by sex		C13. Adolescent causes of death, by sex
Nutritional	A20. Low birth weight prevalence (%) A21. Under-5 stunting (%)	B13. Under 5 underweight (%) B14. Under 5 overweight (%)	

A22.Wasting prevalence (moderate and severe, # and %), <5		
A23. Women of reproductive age, short stature		
A24. Prevalence of anemia in women aged 15-49		
A25. Women (15-49) with: low BMI (<18.5, %), BMI 25-30 (%, overweight), BMI > 30 (%, obese), disaggregate by age to get adolescent		

Table 3. Drivers indicators

	Indicator Map by Tier (red = Countdown to 2015 indicator)		
Tiers	**1: In country profiles (critical)**	**2: On website, with data (complementary)**	**3: On website, but no/ad hoc data (aspirational)**
Sexual and Reproductive Health	**A1.** Legal status of abortion	**B1.** Whether laws and regulations guarantee women 15-49 access to contraception independent of spousal or parental consent **B2.** If fees exist for health services in the public sector, are women of reproductive age (15-49) exempt from user fees for [MH-related health] services (disaagregate for adolescents if possible, and also specify whether commodities/ medicines are included) **B3.** Percent of women using contraception who participated in the decision to use contraception	**C1.** Presence of a national strategy and action plan with budget allocations on sexual and reproductive health which is periodically reviewed and monitored through participatory processes and disaggregated by prohibited ground of discrimination (per ESCR General Comment No. 22 (2016) on the right to sexual and reproductive health) **C2.** Does the State ensure that access to SRH information and services is not impeded by the claim of conscientious objection by a health care provider or pharmacist?
Maternal and Newborn Health	**A2.** Antenatal corticosteriods for preterm labour **A3.** Kangaroo mother care for low birthweight newborns **A4.** Maternity protection (Convention 183)	**B4.** Management of childbirth policy **B5.** Discharge after birth for mother and newborn policy	**C3.** Chlorhexidine for countries with NMR over 30 **C4.** Minimum or basic newborn policy delineating the essentials of newborn care to be provided **C5.** Presence of protocols/policies on combined care of mother and baby, immediate breastfeeding, and observations of care **C6.** Presence of Respectful Maternity Care (RMC) as a right in the national health plan(s)

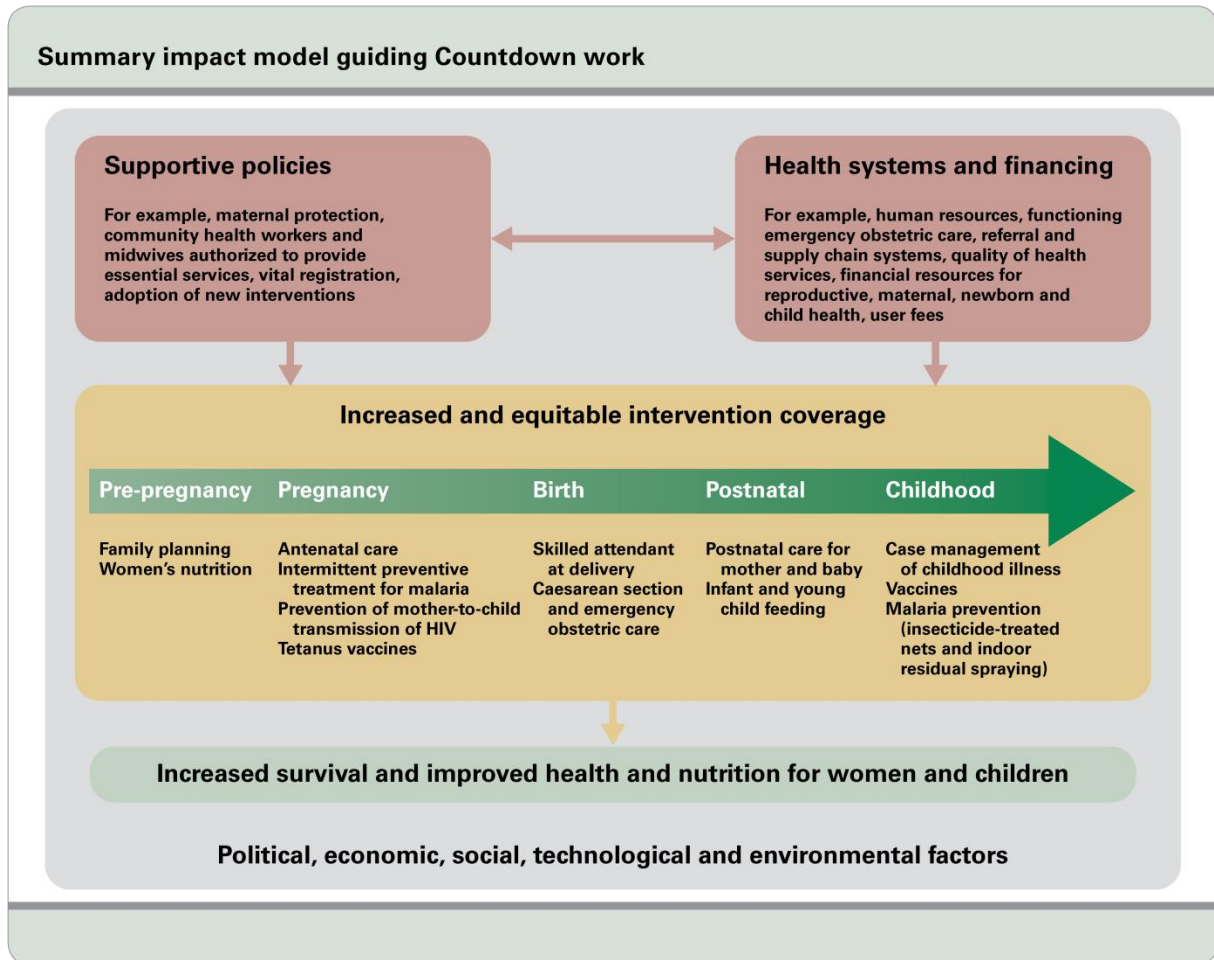|	A	B	C
Under 5 child health	**A5.** National policy on integrated community case management of childhood illness	**B6.** National guidelines for management of childhood illnesses **B7.** Implementation of the Integrated Management of Childhood Illnesss (IMCI) Strategy **B8.** Periodic reporting to the Convention of the Rights of the Child (CRC)	
Adolescents	**A6.** Family planning for adolescents without spousal or parental consent	**B9.** Country includes HPV vaccination in its vaccination program **B10.** Legal age of marriage in the country by sex **B11.** For unmarried adolescents, does the country have laws or regulations that allow underage (minor) adolescents to provide consent to the following services without parental consent? If yes, at what age? **B12.** Does the country have national policy/strategy documents specific to adolescents or young people (10-24 years) or are adolescents or young people cited as a specific target group for defined interventions/activities in a national policy/strategy document for the following health issues? **B13.** The country has national standards for delivery of health services to young people **B14.** The country has a functional national adolescent health programme	
Nutrition	**A7.** International code of marketing of breastmilk substitutes	**B15.** National guidelines for management of severe acute malnutrition (SAM) incorporating the community based approach	**C7.** Extent of constitutional right to food

	A8. Legislation on fortification (wheat, rice, maize)		**C8.** Policy on supplementation on iron folate
NCDs			
Service Delivery	**A9.** Availability of functional emergency obstetric care (EmOC) facilities, disaggregating between BEmOC and CEmOC facilities	**B16.** Availability of EmOC by estimated births **B17.** Informed choice for contraception (index)	**C9.** Availability of services for mothers and newborns that are provided in the same setting) **C10.** Proportion of maternity facilities that are "baby friendly"; or proportion of births in Baby Friendly Hospitals **C11.** Percentage of health facilities with a water source or water supply in or near (within 500m) the facility for use for drinking, personal hygiene, medical activities, cleaning, laundry, and cooking **C12.** Availability of functional routine care: obstetric and newborn care facilities **C13. (1/2)** Percentage of facilities that demonstrate readiness to deliver specific services, family planning, antenatal care, basic emergency obstetric care, and newborn care INCLUDING: functioning emergency transport; life-saving commodities for maternal and newborn health; and A water source or supply in or near (within 500m) the facility for use for drinking, personal hygiene, medical activities, cleaning, laundry, and cooking **(2/2)** Percentage of health care facilities in a country that offer a minimum package of sexual and reproductive health services **C14.** Proportion of health facilities that provide postpartum, postabortion and/or HIV services that also provide clients who use those services with contraceptive information and care

			C15. Percentage of health facilities with clinical management of rape survivors (as per WHO guidelines) **C16.** Presence of a national grievance mechanism (ex: ombudsperson) to receive and facilitate resolution of concerns and grievances from affected parties related to [SRMNCAH] **C17.** Does the government have mechanisms in place for reporting instances of denial of services on non-medical grounds (age, marital status, ability to pay) or coercion (including inappropriate use of incentives to clients or providers)? **C18.** SRH users reporting privacy **C19.** Percentage of facilities with electricity
Health Workforce	**A10.** Density of health workers **A11.** Midwives authorized for specific tasks	**B18.** Health worker density and distribution **B19.** Population density of health workers (per 1,000 population): physicians, nurses and midwives, and community health workers **B20.** Health personnel authorized for tasks and responsibilities during childbirth	**C20.** Density of midwives, by district (by births) **C21.** Presence of a component that specifically addresses the Universal Rights of Childbearing Women (RMC Charter) in the national pre-service education curriculum for all midwifery service providers
Health Information	**A12.** Maternal deaths review elements	**B21.** The maternal death surveillance and response system is reviewed annually in terms of completeness of surveillance and quality of the response, including actions to improve quality of care **B22. (1/3)** National policy requiring all neonatal deaths to be reviewed **(2/3)** National policy requiring all stillbirths to be reviewed **(3/3)** Facility stillbirth review (audit) in place	**C22.** Maternal death registration including cause of death

Medicines & Commodities	**A13.** Reproductive lifesaving commodities in essential medicine list **A14.** Maternal lifesaving commodities in essential medicine list **A15.** Newborn lifesaving commodities in essential medicine list **A16.** Child lifesaving commodities in essential medicine list		**C23.** Availability of essential medicines and commodities **C24.** Year the essential medicines list was most recently revised **C25.** Whether lifesaving RMNCH commodities have products registered **C26.** Availability of essential RMNCH commodities at central stores **C27.** Commodities included in the RMNCH costed plans
Financing related to	**A17.** Costed national implementation plan for maternal, newborn and child health		**C28.** Costed national implementation plan for reproductive health
Financing - National-level	**A18.** Per capita Total Expenditure on Health **A19.** Government expenditure on health per capita **A20.** Out of pocket expenditure as % of total expenditure on health **A21.** General government expenditure on health as % of total government expenditure	**B23.** Total expenditure on health (% of gross domestic product) **B24.** Headcount ratio of catastrophic health expenditure **B25.** Headcount ratio of impoverishing health expenditure	**C29.** Share of total health expenditure that is pooled **C30.** Progressivity of health sector funding **C31.** RMNCH expenditure by source (COIA) (general government expenditure, external sources, private sources)
Financing - Official	**A22.** ODA flows to RMNCH (Muskoka method) (2015)	**B26.** ODA to child health per child (US$) (LSHTM method) (2013) **B27.** ODA to maternal and newborn health per live birth (US$) (LSHTM method) (2013)	

Leadership/Governance/ Community Participation	**A23.** Civil society involvement in national maternal newborn and child health programmes		**C32.** The national RMNCAH strategy/plan of action mandates community participation in decision-making, delivery of health services, and monitoring and evaluation **C33.** Districts/provinces have community accountability mechanisms (e.g. score cards, community consultations, community conversations, community charters, community health committees, civil society hearings etc.) in place to support women's, children's and adolescents' health **C34.** Country holds routine national health sector reviews with basic criteria for broad stakeholder participation, including a structured process to engage political and financial decision makers **C35.** System in place for dialogue service users and providers
Cross-cutting		**B28.** Proportion of local administrative units with established and operational policies and procedures for participation of local communities in water and sanitation management **B29.** Right to universal access to health services enshrined in national legislation	**C36.** Proportion of countries where the legal framework (including customary law) guarantees women's equal rights to land ownership and/or control **C37.** Whether or not legal frameworks are in place to promote, enforce, and monitor equality and non-discrimination on the basis of sex

Figure. Evaluation framework guiding CD to 2015 analyses and indicator selection processes (to be updated for CD to 2030)

Summary impact model guiding Countdown work

Supportive policies

For example, maternal protection, community health workers and midwives authorized to provide essential services, vital registration, adoption of new interventions

Health systems and financing

For example, human resources, functioning emergency obstetric care, referral and supply chain systems, quality of health services, financial resources for reproductive, maternal, newborn and child health, user fees

Increased and equitable intervention coverage

Pre-pregnancy	Pregnancy	Birth	Postnatal	Childhood
Family planning Women's nutrition	Antenatal care Intermittent preventive treatment for malaria Prevention of mother-to-child transmission of HIV Tetanus vaccines	Skilled attendant at delivery Caesarean section and emergency obstetric care	Postnatal care for mother and baby Infant and young child feeding	Case management of childhood illness Vaccines Malaria prevention (insecticide-treated nets and indoor residual spraying)

Increased survival and improved health and nutrition for women and children

Political, economic, social, technological and environmental factors

Appendix B. The Composite Coverage Index (CCI)

Countdown tracks a number of coverage indicators since the 1990's, relying primarily on survey data. Analyses of inequalities require splitting the survey samples into smaller groups, such as wealth quintiles or ethnic groups. Such subgroup analyses may be affected by small sample sizes. For example, the denominator for careseeking indicators related to childhood illnesses is the number of children with a recent illness episode, which is usually small. Further breakdowns of this number by wealth or ethnicity or any other stratifier will result in even smaller samples, and resulting estimates will lack precision due to random sampling error. In addition, the actual magnitude of inequalities varies for each coverage indicator, as some are more unequal than others. An alternative is to calculate an index based on the average of several coverage indicators. This index will tend to be more stable, show less random variability and provide a more precise picture of overall inequalities in coverage. A single combined indicator also summarizes coverage levels of several interventions along the continuum of care, thus providing a proxy for universal health coverage in RMNCH and giving a better picture of inequities in coverage between population groups. Since 2008, Countdown has used the composite coverage index (CCI), a weighted average of the coverage of eight interventions along four stages of the continuum of care: reproductive health (demand for family planning satisfied with modern methods or FPSm), maternal health (at least four antenatal care visits or ANC4, and skilled birth attendance or SBA), immunization (BCG, DTP3 and measles vaccines) and management of child illness (oral rehydration solution for diarrhea or ORS, and careseeking for symptoms of pneumonia or CPNM). According to the following formula, each stage receives the same weight, and within each stage the indicators are equally weighted (except for DTP3 vaccine that receives a weight of two because it requires more than one dose).

$$CCI = \frac{1}{4} * (FPSm + \frac{ANC4 + SBA}{2} + \frac{BCG + 2DPT3 + MSL}{4} + \frac{ORS + CPNM}{2})$$

The CCI has been extensively tested and compared to other summary indicators, and has proven to be a highly valuable tool for assessing levels and trends in coverage inequalities.

Additional information on the CCI is available on the Countdown to 2030 website: www.countdown2030.org

Reference:

Wehrmeister FC, Restrepo-Mendez MC, Franca GV, Victora CG, Barros AJ. Summary indices for monitoring universal coverage in maternal and child health care. Bull World Health Organ. 2016 Dec 1;94(12):903-912. Epub 2016 Nov 3.

Appendix C Multi-level models for trends in stunting in children under five years of age, and CCI by wealth

Additional methodological details related to Figure 2. Stunting trends in the poorest and richest wealth quintile of the population, 53 Countdown countries with available data, weighted by the under-five population, 1993-2015

- The analysis included surveys with data on children under three years of age instead of children under the age of five. 18 DHS carried out between 1993 and 1999, which collected data only for children under three years of age were also included. The analysis included only countries with at least two surveys with anthropometric data available. The total number of surveys included in the analysis was 190 from 53 countries.
- As stunting prevalence tends to increase with age, we predicted under-five prevalence based on linear regression of the under-three prevalence using the following equation: under-five % = -0.0114274 + (1.104429 * % under-three). This equation was derived from 150 DHS with data on stunting prevalence for both age groups.
- Trends in stunting prevalence were calculated separately for the 40% poorest (Q1-Q2) and the 60% richest (Q3-Q5) households in each survey. Multilevel models were used to fit survey years within each country, and all CD countries were pooled together. Quadratic terms were fitted – if significant, there was evidence of non-linearity. There was evidence of non-linearity in both poorest and richest groups indicating that there was acceleration over time.

Additional methodological details related to Figure 4. Countdown countries ranked according to the degree of absolute inequality (brown line) in the CCI, with coverage rates in the poorest and richest wealth quintiles

We ranked CD countries according to the magnitude of wealth-related inequalities in the CCI. Survey data were used to classify families into wealth quintiles, based on the ownership of household assets (televisions, refrigerators, etc.) and on characteristics of their houses (building materials, water supply, etc.). We then calculated the CCI for each quintile, and assessed the magnitude of disparities using the slope index of inequality, which measures the difference in the CCI between the richest and poorest extremes of the wealth scale while taking into account the full distribution of wealth. Figure 1 shows that Nigeria was the most unequal country, with a slope index showing a 64 percent point difference between the top and bottom extremes of wealth. Angola came next, with an index of 59. The slope index was positive – that is, showing higher coverage among the rich than the poor – in all countries except for Turkmenistan, where the CCI was 83% and 80% in the poorest and richest quintiles, respectively. In 30 of the 63 countries with data, the slope index was greater than 20 percent points, showing unacceptable inequalities between the rich and poor. On the other hand, nine countries (Tajikistan, Cambodia, Rwanda, Dominican Republic, Guyana, Algeria, Kyrgyz Republic, Malawi and Swaziland) showed little inequality, with an index below 10 percent points. All had national CCI coverage of 60% or higher. Chad showed the lowest CCI coverage and moderate inequality, being the only country where the CCI was below 50% in the richest quintile.

Regrettably, the CCI could not be calculated for one in four CD countries due to lack of recent surveys. Lack of regular data collection compromises monitoring and programming. For example, Angola had not had a national RMNCH survey since 2001, and the 2015 results showed huge inequalities – a finding that will help policymakers and managers take remedial action.

Reference: Barros AJD, Victora CG. Measuring Coverage in MNCH: Determining and interpreting inequalities in coverage of maternal, newborn, and child health interventions. PLOS MED 2013

Appendix D. List of Countdown countries considered malaria endemic and included in the analyses of the malaria indicators tracked by Countdown, and results of the malaria indicator analyses

Table. *Countdown* countries by malaria transmission risk

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 = 43)		Countries 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 *Plasmodium falciparum* (N = 6)
Haiti	Liberia	Bhutan
Mauritania	Mozambique	Ethiopia
Kenya	Malawi	Botswana
Cameroon	Rwanda	Philippines
United Republic of Tanzania	Sierra Leone	Myanmar
Nigeria	South Sudan	Djibouti
Madagascar	Togo	
Mali	Uganda	
Senegal	Zambia	
Democratic Republic of the Congo	Comoros	
Angola	Sudan	
Burundi	Somalia	
Benin	Eritrea	
Burkina Faso	Chad	
Central African Republic	Niger	
Côte d'Ivoire	India	
Congo	Timor-Leste	
Gabon	Namibia	
Ghana	Zimbabwe	
Guinea	Yemen	
Gambia		
Guinea-Bissau		
Equatorial Guinea		

Figure. Median national coverage of select malaria interventions, CD2030 countries considered malaria endemic, most recent survey, 2012 or later (%)
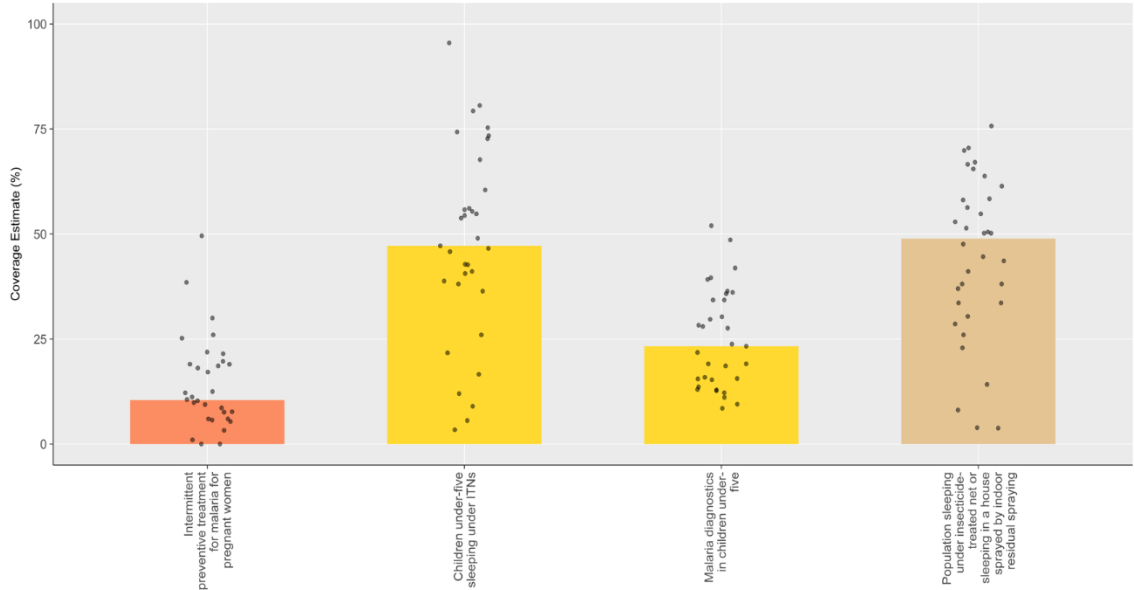
Data source: United Nations' Children's Fund global databases, July 2017, based on Demographic and Health Surveys, Multiple Indicator Cluster Surveys and other national surveys.

Appendix E. Inequalities by each of the 8 indicators in the Composite Coverage Index (CCI), and by the CCI

As a summary measure, the composite coverage index includes eight indicators with variable magnitudes of inequality. The figure below shows that inequalities tend to be smaller for oral rehydration salts for diarrhea and for immunization coverage, compared to skilled birth attendance or four antenatal visits. These results confirm the earlier findings highlighted in the Countdown to 2015 reports, namely that interventions that may be delivered at community level tend to be more equitable than those requiring access to fixed health facilities.

Figure. Average levels by wealth quintile in 63 Countdown countries with available data for the eight coverage indicators included in the CCI.
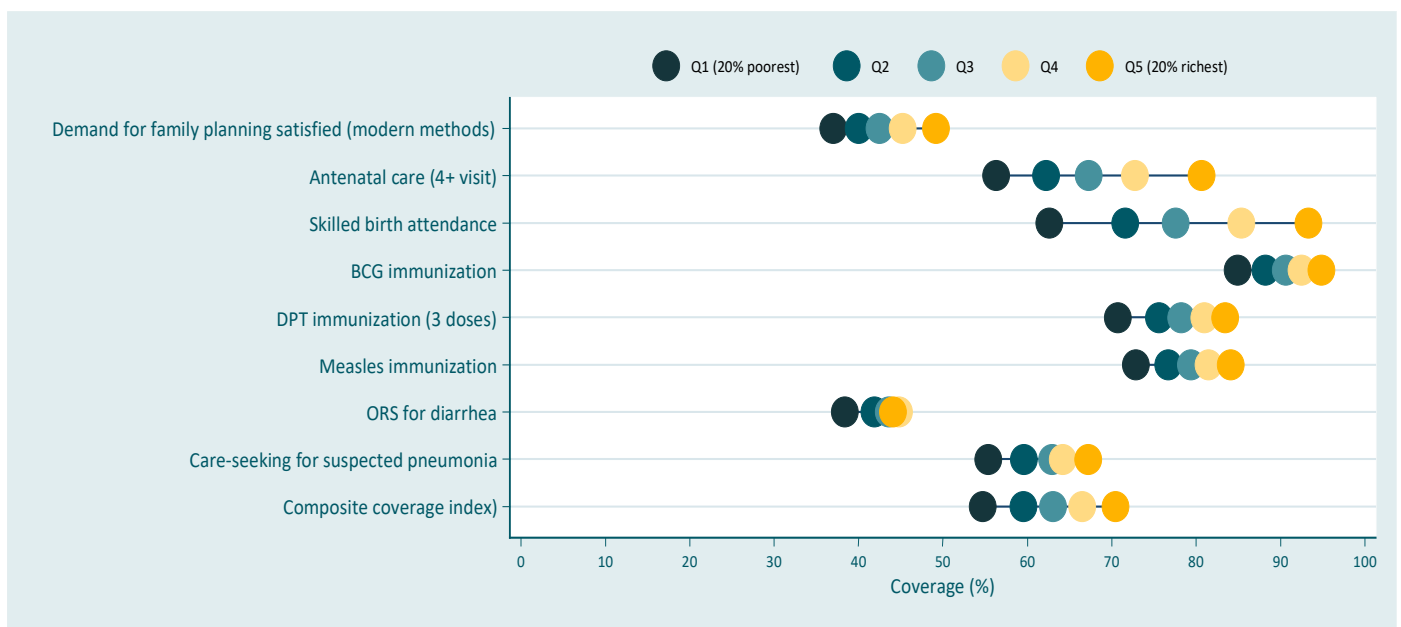
 Data source: Analysis of Demographic and Health Surveys and Multiple Indicator Cluster Survey data sets at the International Center for Equity in Health at the Federal University of Pelotas.

Appendix Panel 1. Figures and methodological note for estimating the numbers of women and children missed (that did not receive) key coverage interventions.

The total number of individuals covered by an intervention was estimated by multiplying the total target population by an estimate of the coverage of the intervention. The analysis was carried out separately for each country and aggregated across all Countdown countries. For each intervention, the coverage estimate from the most recent national household survey during the period 2012 or later was used. For countries without a coverage estimate during this period, the median coverage across countries with available data was used. The target population was derived from the World Population Prospects, 2017 Revision.[2] For some indicators, additional calculations were made to arrive at an estimate of the target population. These include the proportion of married women with a demand for family planning satisfied with modern methods (DFPSm), careseeking for symptoms of acute respiratory infection, ORS for diarrhea. For DFPSm, two additional indicators are required to estimate the target population: the proportion of women 15-49 who are currently married, and the proportion of married women with a demand for family planning (those currently using a method + those with unmet need for FP). We obtained the proportion of women 15-49 currently married from the UN Population Division.[3] The proportion of married women with demand for family planning was obtained from household survey estimates compiled by the UN Population Division.[4] The total population of women aged 15-49 multiplied by the product of these two proportions gives an estimate of total number of women 15-49 with a demand for family planning. This target population was then multiplied by the coverage of DFPSm to obtain the number of married women with demand for family planning satisfied. For childhood treatment indicators, it was necessary to estimate the two-week illness prevalence. This was obtained from latest DHS and MICS in each country. For countries without such data, a median across countries with available data was imputed. The estimate two-week prevalence multiplied by the total population of children under-age five gives the number of children under-five with the illness. This number is then multiplied by the coverage of treatment of the illness (careseeking for ARI) to obtain the total number of population covered. The number of population not covered is obtained by using the complement to 100% of the coverage estimate of the intervention.

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[2] United Nations, Department of Economic and Social Affairs, Population Division (2017). World Population Prospects: The 2017 Revision, DVD Edition.

[3] United Nations, Department of Economic and Social Affairs, Population Division (2016). Estimates and Projections of the Number of Women Aged 15-49 Who Are Married or in a Union: 2016 Revision. New York: United Nations.

[4] United Nations, Department of Economic and Social Affairs, Population Division (2017). World Contraceptive Use 2017 (POP/DB/CP/Rev2017).

Figure: Population covered and not coverage for selected indicators (in thousands)
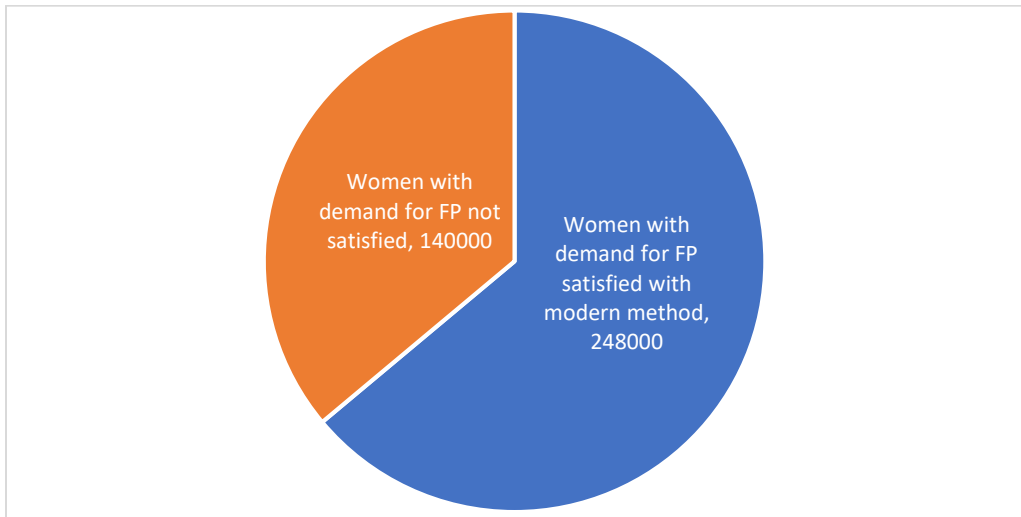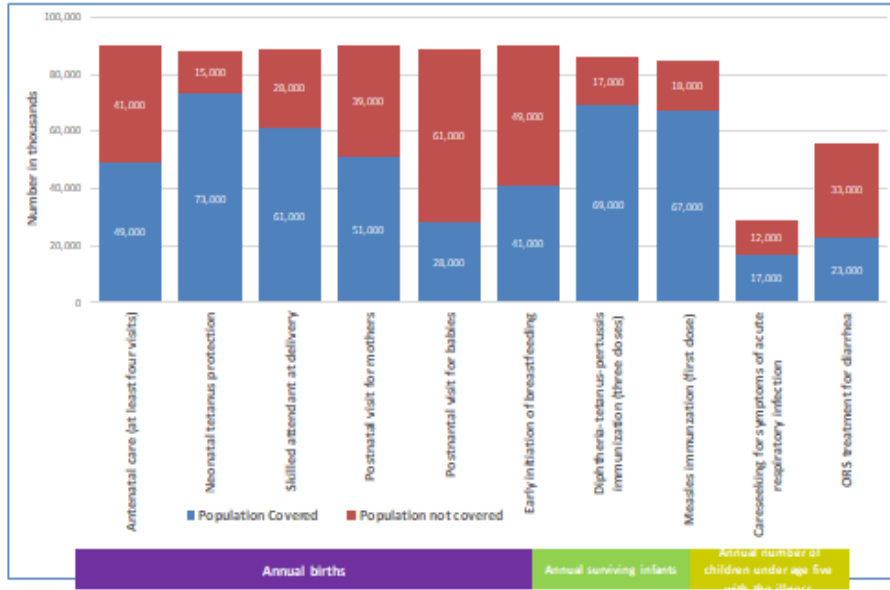
Appendix Panel 2. The coverage cascade and effective coverage

Measuring the key domains of quality of care

Coverage of key RMNCH&N interventions has increased in many of the Countdown countries in the last decade (Table 3 and Figure 3 above). Increases in coverage of health services, however, will not translate into improved population health outcomes unless the services provided are of adequate quality (1,2). Therefore, monitoring progress towards better health for women, children, and adolescent girls requires measures that also capture the quality of services.

Quality of care is a multidimensional construct[i] and measurement of it is often complex. It is typically organized into four domains: inputs – the physical and organizational structures of healthcare settings; process – the delivery of services to clients; outcomes – effective coverage; and impact – the benefit of services on patients or populations (3). Measures of inputs, process, outcomes, and impact are complementary and provide distinct insights into the quality of the care delivered. Adequate inputs are a necessary foundation but do not guarantee that evidence-based services are delivered with adequate quality. Process measures provide insight into the specific content of services provided, including outputs such as timely delivery of a required intervention, but can be onerous to collect. Outcome measures take into account the adherence to and efficacy of the treatment. Impact measures are the ultimate test of whether services had the intended health effect but are also affected by factors outside of the health system, such as patient characteristics (4). Effective coverage can refer to any of these domains but generally the term should be reserved for indicators that capture the intended health gains from services used by the population in need. Effective coverage measures are key to determining whether care delivered can improve health, to assess whether care meets user expectations, and to promote national accountability for health system functionality. Although capturing information about patient satisfaction is an essential aspect of assessing the quality of care, Countdown currently focuses on improving measures of coverage from the service provision perspective.

Figure 1 summarizes a multi-step hypothetical cascade of the potential losses of health benefits of interventions once an individual accesses needed health services.   There are measurement challenges at each step of this cascade, discussed below.

Figure 1: Hypothetical cascade of the potential losses of health benefits of interventions based on aspects of health service delivery, and user adherence .
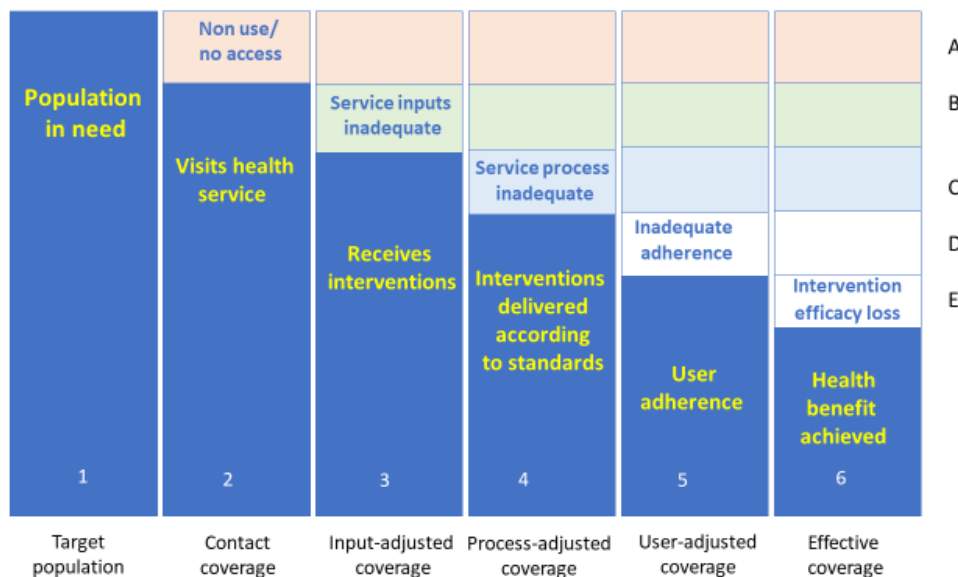
Data sources and analytical methods

Multiple, albeit imperfect, data sources exist that can shed light on effective coverage – particularly evidence of gaps in care – for selected conditions. Two types of surveys can provide a basis for effective coverage calculations. Household surveys, such as the Demographic and Health Surveys (DHS) and the Multiple Indicator Cluster Surveys (MICS), provide information on health care need and utilization; they also assess individual recall of the content of care as a source of limited information on quality. Facility surveys, such as the Service Provision Assessment (SPA) and the Service Availability and Readiness assessment (SARA) capture health facility readiness. Selected SPA surveys include direct observation of clinical visits, enabling measurement of process indicators. Geographic information from household surveys and facility assessments permits the linking of these sources for countries with both surveys in the same timeframe. There are, however, several limitations of these two survey data sources related to the scope and validity of clinical content that can be captured through household surveys (5), representativeness of the populations captured in facility-based assessments and challenges with the geographic and temporal relationships of facility and household survey datasets.(6,7)

Increasing evidence across Countdown countries suggests that the quality of care received once patients reach health services is insufficient to yield expected health gains. Essential interventions to be delivered during antenatal care, for example, are often provided inconsistently,(8) basic resources needed for safe and effective delivery care are often absent,(9, 10) and misdiagnosis and incorrect treatment of childhood illnesses are common.(11) Here, we present evidence from a range of settings to illustrate critical quality of care issues for antenatal care.

Quality gaps in antenatal services

ANC Service inputs

Facility assessments on the availability and readiness of services provide information on the inputs needed for the delivery of high quality services. Figure 1 shows information on the readiness[5] of health facilities to deliver key ANC services from 20 facility assessments (SARA or SPA) in 13 Countdown countries in sub-Saharan Africa (12). Median coverage was 83% for neonatal tetanus immunization, 84% for IPTp, 42% for syphilis screening, 23% for hypertension management, and 85% for iron supplementation (85%).

Figure 2: Health facility readiness to deliver key ANC interventions from 20 facility assessments (SPA and SARA) in 13 countries in sub-Saharan Africa, 2002-2016.
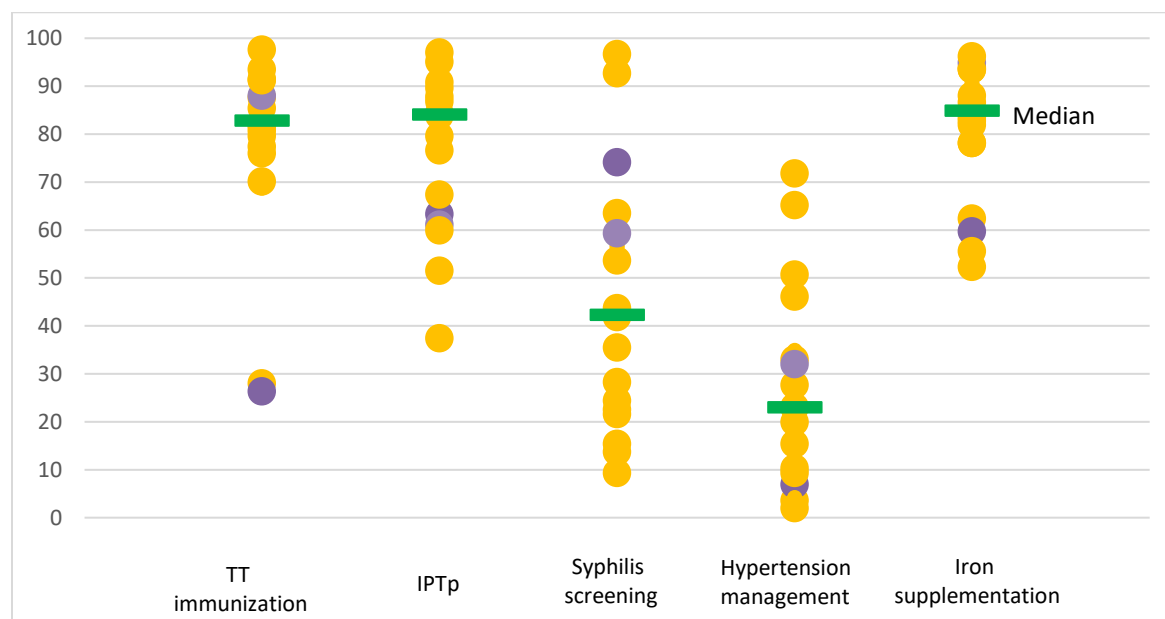
Likelihood of receiving appropriate ANC

Geographical linking of population surveys with facility assessment data is a method used to provide input-adjusted effective coverage measures. The findings from the 20 facility surveys in the 13 Countdown Sub-Saharan African countries showed that the likelihood of appropriate care in the sampled facilities was low (Figure 3).[6] While on average 93% of women attended ANC at least once, only 50% made it to at least 4 visits. And, the likelihood of these women receiving critical interventions such as tetanus immunization, IPTp, syphilis screening and/or treatment, hypertension management or iron supplementation were below 20%. Box 1 provides a comparison of crude and process-adjusted measures of ANC4+ at the subnational level in Nepal, illustrating the added value of the process-adjusted measure for program monitoring purposes.

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[5] A facility ready is defined as a facility with the equipment, diagnostics, and medicines and commodities to deliver the listed interventions (TT immunization, IPTp, syphilis screening, hypertension management and iron supplementation).

[6] High likelihood of appropriate care is defined as attending a health facility that has the necessary equipment, diagnostic, medicines, and commodity in stock, was equipped with ANC guidelines, and had at least one staff member who has been trained recently.

Box: Subnational assessment of the quality of antenatal care services, Nepal.

Quality of care-adjusted coverage should be assessed at the subnational level, enabling the identification of areas experiencing major deficiencies. Figure 4 presents two maps of Nepal. The first shows subnational variations in coverage of ANC4+ (n=2059) based on the 2014 MICS. The second map presents data based on direct observations of clinical care (n= 1509) on the average receipt of specific ANC interventions per WHO guidelines from the 2015 SPA.

Comparing the two maps shows that there are wide variations across subregions in crude coverage of ANC4+. This pattern of sub-regional variation persists when looking at the coverage of specific interventions that are recommended for delivery during ANC, and the second map also shows that coverage of the specific interventions is markedly lower than the crude coverage of AN$+ in all subregions.

Figure: Coverage of at least four antenatal care visits compared with process-adjusted coverage of antenatal care.
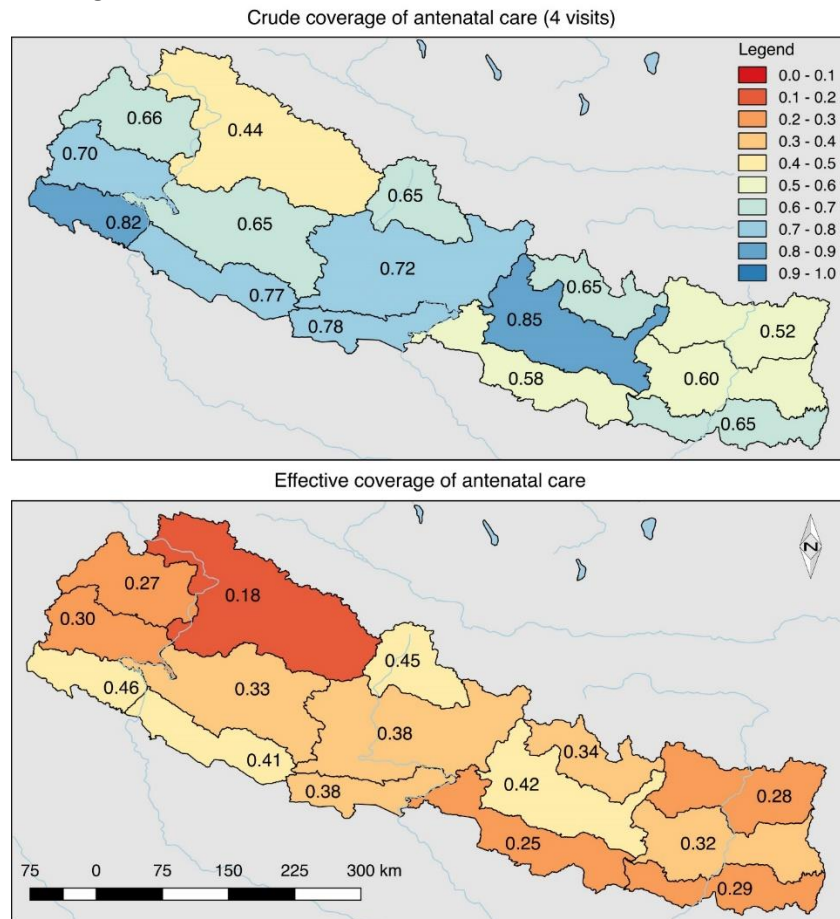
This comparison demonstrates that looking only at coverage of ANC4+ visits gives a distorted and overly optimistic view of coverage of the interventions recommended for delivery to pregnant women.

Figure 3: Median coverage of at least 1 and at least 4 antenatal care visits (%) and median coverage of high likelihood of receipt of selected antenatal care interventions (%); 13 countries in sub-Saharan Africa
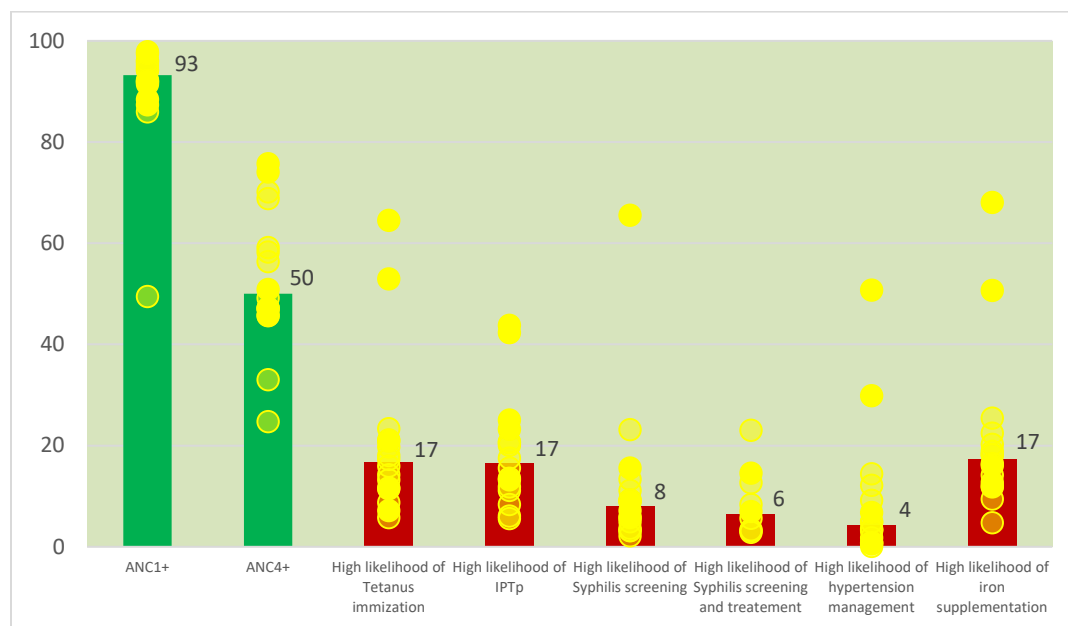
Source: Data from Kanyangarara M, Munos MK, Walker N. 2017.

Attendance and content of ANC

Household surveys provide further insights into calculating process-adjusted coverage measures based on answers to questions on the contents of antenatal care. The drop in antenatal care attendance between first and fourth visit has been documented in many surveys in almost all Countdown countries. An analysis of the contents of care for specific services that are supposed to be provided during antenatal care in 41 countries showed that, on average, less than half of pregnant women reported receiving counseling on pregnancy danger signs (49%), HIV counseling and testing (35%), iron-folic acid supplementation (15%), or IPTP (11%) in malaria endemic countries (Hodgins et al, 2014). Compared to the high coverage of at least one ANC visit (90%), the average gap of process adjusted coverage across seven recommended ANC interventions is 44 percentage points, with considerable variation between countries and interventions.

Conclusion

Much more work is needed to improve the quality of care and increase effective coverage of essential RMNCH interventions. The examples above on antenatal care show the cavernous gap between coverage levels of ANC at least one visit and coverage of specific ANC interventions – making clear that assessing coverage of service contacts is insufficient and masks important gaps in the quality of care that must be addressed. In many instances, the illustrative data suggest that gaps between crude coverage and coverage adjusted for service inputs for ANC can be as large as 75-90 percentage points when ANC 1 is considered or 30-45 or 30-45 percentage points compared to those making 4 or more ANC visits. For process-adjusted coverage, the gaps are about 50%. Major gaps in the quality of care, affecting the

potential health impact of essential interventions, have been observed in association with many other indicators such as delivery and newborn care (Kruk 2016, Marchant 2015 Kanyangarara 2017), treatment of childhood illnesses (Mohanan 2016, Winter 2015) and family planning. There is also evidence that poorer women not only experience lower contact coverage for ANC and skilled attendant at birth, but also receive poorer quality of care (Kruk, TLGH 2015, Hernandez 2016). At present, countries lack coordinated and systematic assessments that can help them understand the imperfect connection from patient contact with a service provider to health outcomes which they need to identify priorities for improvement (e.g., whether specific inputs or processes need to be prioritized to improve the quality of care of essential interventions and, ultimately, health outcomes for women, children and adolescent girls).

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be safe, effective, timely, efficient, equitable, and people-centered."(13) This definition was developed in the context of care for pregnant women and newborns, but is in line with other quality definitions and applies to health services for all populations.