

**2017**

**PNEUMONIA & DIARRHEA  
PROGRESS REPORT  
APPENDIX**

## EXPANDED METHODS AND RESULTS

### Top 15 Countries in the World with the Greatest Number of Under-5 Pneumonia and Diarrhea Deaths in 2015

Data from UNICEF, WHO, and MCEE Group

<b>1</b>	<b>India</b>	7	5	296,279	1,200,998
<b>2</b>	<b>Nigeria</b>	19	11	210,218	750,111
<b>3</b>	<b>Pakistan</b>	12	7	103,444	431,568
<b>4</b>	<b>Democratic Republic of the Congo</b>	15	10	78,273	304,558
<b>5</b>	<b>Angola</b>	27	23	54,428	169,310
<b>6</b>	<b>Ethiopia</b>	10	5	46,962	184,186
<b>7</b>	<b>Indonesia</b>	5	2	33,550	147,162
<b>8</b>	<b>Chad</b>	32	19	30,636	82,728
<b>9</b>	<b>Afghanistan</b>	18	11	30,394	94,261
<b>10</b>	<b>Niger</b>	19	10	28,162	87,967
<b>11</b>	<b>China</b>	1	0	27,113	181,574
<b>12</b>	<b>Sudan</b>	12	7	25,088	89,488
<b>13</b>	<b>Bangladesh</b>	5	2	24,541	119,326
<b>14</b>	<b>Somalia</b>	33	20	23,427	60,537
<b>15</b>	<b>United Republic of Tanzania</b>	7	4	22,322	98,180

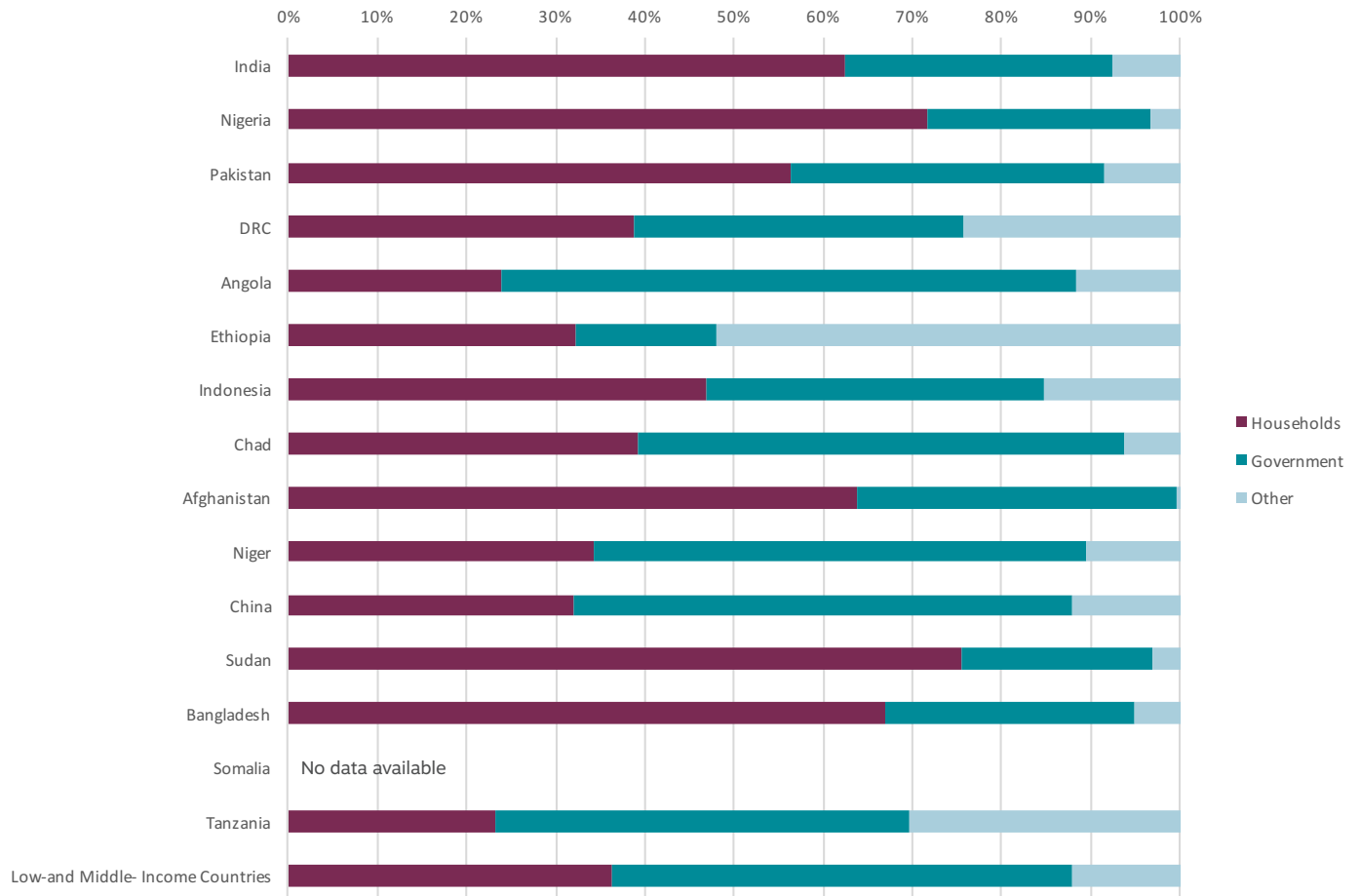
# EXPANDED METHODS AND RESULTS

## Equation to calculate overall GAPPD target score

**NUMERATOR:**  
 90% coverage X 5 vaccines  
 + 90% coverage X 4 treatments  
 + 50% breastfeeding coverage  
  
**DIVIDED BY**  
  
**DENOMINATOR:**  
 10 interventions  
  
 = **86% TARGET OVERALL GAPPD SCORE**

## Health care spending for the 15 greatest burden countries

Expanded data from 'The Costs We Don't Account For' piece, pg. 26



Source: World Health Organization Global Health Expenditure database (13)

IVAC at Johns Hopkins Bloomberg School of Public Health Access the full report and materials at <https://www.jhsph.edu/research/centers-and-institutes/ivac/resources/pneumonia-diarrhea-progress-report.html>



### *Understanding and interpreting the GAPPD scores*

GAPPD scores are calculated as the average of all available data for the selected indicators. Indicators for which there is no data available for a given country are excluded from the score for that country but, as a result, those with several missing indicators—such as Angola or China—may have scores that either over- or underestimate the country’s true progress. Zero data—indicators for which the reported coverage level is 0%, as seen in countries that have not introduced a specific vaccine—are included in the GAPPD score, and have a more significant impact on the GAPPD scores than missing data. Finally, progress may appear stalled in countries where coverage estimates for GAPPD indicators are not updated annually, even if the country has made improvements in the recent year. Our analysis assumes no change from the most

recent available data during that period (i.e., given a lack of new data for a particular indicator, we treat the most recent estimate reported as remaining constant through to 2017). As such, scores may not reflect changes—positive or negative—since the data was reported. This limitation underscores the importance of investing in high-quality, regularly collected data that enables monitoring of key GAPPD interventions. GAPPD scores calculated for countries with more available data offer more accurate assessments of their performance against GAPPD targets. Scores should be treated as estimates to assess overall trends in countries’ performances as they work towards implementing and expanding key pneumonia and diarrhea interventions, which could help inform programming and policymaking.

### *Prevention indicators*

Every year, WHO and UNICEF jointly review Member States’ submitted reports on national immunization coverage, finalized survey reports, and data from published and grey literature to jointly estimate the most likely coverage levels for each country (11). Each year, WUENIC estimates are issued; they include newly reported coverage rates for the previous year, as well as refreshed estimates of rates for all prior years (11). For example, the 2017 WUENIC estimates includes newly reported rates for 2016, as well refreshed rates for 2015 and earlier. As a caveat, changes in estimated coverage for prior years do not necessarily imply actual coverage increased or decreased for that year; they do reflect adjustments made based on data that became available within the last year. In practice, this means that we used the 2017 WUENIC dataset to recalculate 2016 GAPPD scores using the refreshed 2015 immunization coverage rates, and calculated 2017 GAPPD scores using the newly reported 2016 immunization coverage rates.

#### **UNDERSTANDING 0% VACCINE COVERAGE**

A 0% vaccine coverage means that in 2016, countries either had not introduced that vaccine into their national immunization programs, or they did introduce the vaccine but still reported a coverage of 0% (this happens when a new vaccine introduction occurs late in the year or in phased rollout). We included 0% vaccine coverage in our GAPPD scores, and validated country introduction status using IVAC’s VIEW-hub database (12).

#### **UNDERSTANDING NEW VACCINE INTRODUCTIONS IN 2016**

Between the 2017 and 2016 report, one focus country introduced a new vaccine. India introduced RVV in 2016 in a phased manner in an initial cohort of four states, contributing to an increase in national RVV coverage from 0% to 4%. Some countries also completed additional phases of vaccine rollouts, which may have been partly captured as increases in vaccine coverage rates reported by WUENIC. For example, India

## DATA LIMITATIONS

completed national scale-up of Hib/pentavalent vaccine in late December 2015. One of the final Indian states to introduce the vaccine, Uttar Pradesh, alone comprises more than 15% of the country's population; several other states also introduced this vaccine in late 2015. This is likely a significant driver of the 35 percentage point increase in coverage reported in 2016. Similarly, Nigeria introduced PCV in December 2014 in a phased manner, and completed scale-up in 2016, which likely contributed to the 13 percentage point increase in 2016 in PCV3 coverage. Bangladesh introduced

PCV in March 2015, which was captured in the 2016 WUENIC report, contributing to the 49 percentage point increase in PCV3 coverage from 2015. Several countries reported 0% coverage for PCV3 and/or RotaC in 2016 but introduced these vaccines in early 2017, including new phased introductions of PCV in India and RVV in Pakistan. Others have expressed plans to introduce these critical vaccines in the near future. More information about country introduction status for select vaccines is available through VIEW-hub.

### *Protection and treatment indicators*

Estimates for treatment and breastfeeding coverage rates are not updated annually. Thus, we used estimates from the latest year for which data were available in the UNICEF aggregate dataset. In some instances, more recent data was published but not available in the UNICEF aggregate dataset at the time of data analysis.

#### **UNDERSTANDING “MISSING” CARE SEEKING, ANTIBIOTIC TREATMENT, ORS TREATMENT, OR EXCLUSIVE BREASTFEEDING COVERAGE**

A “missing” treatment coverage means that data were not reported or were out-of-range (reported more than 10 years ago). In either case, the lack of data implied the level of access to the treatment in the country was unknown—and we did not include that indicator in our GAPPD scores.

#### **UNDERSTANDING 0% ZINC SUPPLEMENTATION COVERAGE**

A 0% zinc supplementation coverage means that either a country reported a coverage of 0% or did not report on this indicator. If data were not reported, we assumed it was likely used at very low levels in the country—if at all—and reported coverage as 0% in our GAPPD scores.

#### **UNDERSTANDING TREATMENT DATA**

The notable changes from the data reported in the 2016 report are Somalia's treatment indicators (all indicators), and India's antibiotic and zinc indicators. In the 2016 report, data was calculated for Somalia's treatment indicators using weighted averages that factored in population sizes for the two regions for which data was available. This year—as country-level data for Somalia is again unavailable, but there is also a lack of reliable, current population data to calculate weights given the conflict situation in Somalia and the subsequent uncertainty around the country's true population size—we did not use weighted regional averages to generate a national estimate and instead report no data for all four treatment indicators. For India, the PDPR-2016 used antibiotic treatment from DHS 2005-06; that data point is now more than 10 years old, with no new data reported by DHS or MICS, so it was excluded and recorded as no data. In PDPR-2016, India's zinc supplementation indicator was not reported in DHS 2005-06 and was therefore considered 0%. This year, it was considered 0% as it was not reported in the DHS 2005-6, and a new DHS report was not available in time for the main analysis. Finally, for China, no data was reported for the four treatment indicators, as no new DHS or MICS reports have been published since 1995.

## Financing Strategies used by countries to fund health services

By Brooke Farrenkopf, Prarthana Vasudevan, and Dagna Constenla

Without sustainable financing options to ensure the timely introduction of vaccines or implementation of other healthcare programs, there will be needless mortality and morbidity across high burden countries and risk to billions of dollars of public, philanthropic, and industry investment.

Three common health financing strategies used by countries to fund health care services include low-interest multilateral loans, domestic taxes, and global or regional taxes. Low-interest multilateral loans, or concessional loans, are given directly to national governments from multilateral organizations, such as the World Bank or the Inter-American Development Bank, to support large-scale programs in a particular sector such as the health sector. The loans are typically for 10 to 40 years, and, as the name suggests, the low interest rates range between 1% and 7%. Domestic taxes raise new funds for health, either by increasing an existing tax or imposing a new tax on the purchase or use of specific goods or services – like tobacco. Conversely, in developing global or regional taxes, a group of countries agree to collect taxes nationally, that are pooled together to be redistributed at regional or global levels.

The tax on air travel is an example of a successful – and familiar – regional tax. As many of us have experienced, purchasing an airline ticket always includes a final step of accepting an assortment of taxes. Countries have agreed to impose a small fee to passengers purchasing airline tickets in their countries, and airlines collect these taxes to be redistributed regionally and globally. For example, an air ticket levy introduced in 2006 has raised funds for UNITAID, which uses these revenues to fund AIDS, tuberculosis, and malaria programs in select countries. Niger, a PDPR-17 focus country, is one of the nine countries currently participating in the UNITAID air levy.

An example of a domestic tax scheme that has been successfully used to raise new funds for health is a tobacco tax. Another PDPR-17 focus country, Indonesia taxes cigarettes sold in the country to generate government revenue. A portion of that cigarette tax revenue is earmarked for the Profit Sharing Fund from Tobacco Excise, which supports select public health programs as well as tobacco control efforts in Indonesia.

A loan from a development bank is an example of a low-interest multilateral loan. In 2000, India, a PDPR-17 focus country, received a loan from The World Bank to support a five-year Immunization Strengthening Project aimed at eradicating polio and reducing vaccine-preventable diseases, which financed about 50% of India's polio vaccine procurement and social mobilization activities for national immunization days.

Sustainable and innovative financing mechanisms are key to protecting and improving child health. Strong health financing will drive our efforts to strengthen health systems, achieve universal health coverage, and create a world of healthier children.

*SOURCE: Content synthesized from policy briefs developed by Policy Cures (Australia) and IVAC as well as project reports published on WHO and World Bank's websites.*

*Clinton Health Access Initiative*

## Oxygen saves lives – but inequity remains

While oxygen therapy is ubiquitous in the developed world, it is often unavailable in low income countries despite being recommended by the World Health Organization as an essential therapy for hypoxemia—a fatal, yet common complication of pneumonia due to low levels of oxygen in the blood. Oxygen is an essential intervention for pneumonia, and can reduce child mortality due to pneumonia by 35% (Duke et al, 2008).

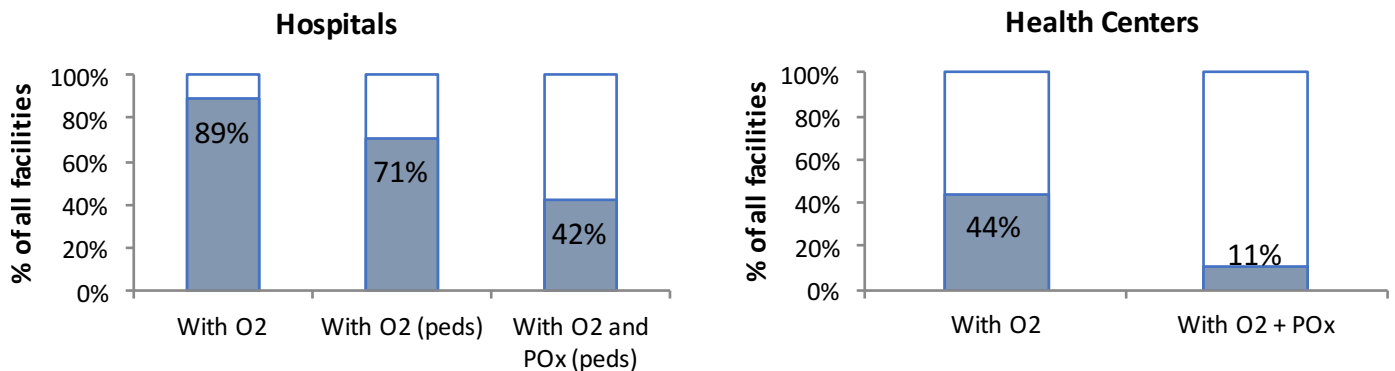
A multi-country baseline assessment conducted by the Clinton Health Access Initiative (CHAI) in Ethiopia, India, Kenya, Nigeria, and Uganda documented the extent of disparities in availability of oxygen and pulse oximeters. 89% of hospitals had oxygen, but it was mainly found in operating theatres and labor

and maternity wards. Both pulse oximeters and oxygen were only found in 42% of hospital pediatric wards and in 11% of health centers. Recognizing these challenges, several countries have initiated bold new efforts to expand oxygen access. The good news: In Ethiopia and Nigeria, for example, governments are launching first-

ever national strategies to expand access to oxygen and improve management of hypoxemia. Momentum is building and recent global policy guidance around the importance of oxygen access is being recognized, but these efforts must continue until we have oxygen for all.

*REFERENCE CITED: Duke T, et al. Improved oxygen supply systems for childhood pneumonia: a multihospital effectiveness study in Papua New Guinea. Lancet 2008; 372(9646):1328-1333.*

### *Availability of oxygen and pulse oximeters in Ethiopia, India, Kenya, Nigeria, and Uganda*



*Source: CHAI Baseline Data 2016/2017. Study included 109 hospitals and 314 health centers from Amhara, Oromia, SNNPR, and Tigray in Ethiopia, 92 hospitals and 432 PHCs and CHCs in Madhya Pradesh, India, 95 hospitals and 1,486 health centers and dispensaries from 18 counties in Kenya, 78 hospitals from Kano, Kaduna, and Niger in Nigeria, and 46 hospitals and 83 health centers in Uganda. Estimates are simple averages across the 4 countries.*

*Lions Club International Foundation*

## Raising awareness and engaging partners to improve measles vaccination

Measles outbreaks and infections remain common in many parts of the world, due largely to stagnated vaccination rates and low awareness of the disease.

The Lions Club International Foundation (LCIF) works to support measles campaigns through resources mobilization, advocacy, and social mobilization activities. Much of their work has centered on raising awareness on the

benefits of measles vaccination and routine immunization, with the aims of improving measles advocacy and engaging partners in this conversation. LCIF has worked to mobilize funds from donors around the world – through

matching programs with partners like Gavi and the Gates Foundation – to purchase vaccines and work with local partners and in-country coordinating committees to address barriers to immunization.

*Results for Development*

## Getting the right antibiotics to the children that need them

Although seemingly straightforward, the delivery of life-saving pneumonia treatment is challenging: high quality, child-friendly antibiotics are not readily available to many of the children who need them. In 2016, Good Ventures, a San Francisco-based philanthropic foundation, awarded Results for Development (R4D) a \$6.4 million grant to support the Government of Tanzania to improve access to amoxicillin dispersible tablets (amox DT).

This program aims to address the barriers to scaling up appropriate pneumonia treatment, which – in the absence of dedicated global funding sources for pneumonia – is a challenge throughout much of the world. Catalytic direct financing to the Government of Tanzania over a period of five-years aims to provide consistent supply of amox DT at public health facilities and

private drug shops. In addition, they are conducting formative research to ascertain current rates of over- and under-diagnosis of pneumonia, and is piloting interventions to improve rational use of amox DT. To ensure long-term financing for amox DT, R4D has been working closely with the Government of Tanzania and other key stakeholders to ensure that robust forecasting and financial

gap analyses are conducted, and to support the identification of domestically-mobilized funding sources. Ultimately, amox DT procurement and financing will transition from external procurement agents to the Government of Tanzania and improve the quality of care around pneumonia.