Childhood Pneumonia and Diarrhoea 4

Ending of preventable deaths from pneumonia and diarrhoea: an achievable goal

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Global under-5 mortality has fallen rapidly from 12 million deaths in 1990, to 6·9 million in 2011; however, this number still falls short of the target of a two-thirds reduction or a maximum of 4 million deaths by 2015. Acceleration of reductions in deaths due to pneumonia and diarrhoea, which together account for about 2 million child deaths every year, is essential if the target is to be met. Scaling up of existing interventions against the two diseases to 80% and immunisation to 90% would eliminate more than two-thirds of deaths from these two diseases at a cost of US$6·715 billion by 2025. Modelling in this report shows that if all countries could attain the rates of decline of the regional leaders, then cause-specific death rates of fewer than three deaths per 1000 livebirths from pneumonia and less than one death per 1000 livebirths from diarrhoea could be achieved by 2025. These rates are those at which preventable deaths have been avoided. Increasing of awareness of the size of the problem; strengthening of leadership, intersectoral collaboration, and resource mobilisation; and increasing of efficiency through the selection of the optimum mix of a growing set of cost-effective interventions depending on local contexts are the priority actions needed to achieve the goal of ending preventable deaths from pneumonia and diarrhoea by 2025.

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This is the fourth in a **Series** of four papers about childhood pneumonia and diarrhoea

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Introduction

The previous papers in this Series about childhood pneumonia and diarrhoea have generated new data and some clear messages. First, although a real and measurable worldwide reduction in mortality from childhood pneumonia and diarrhoea has been achieved in the past decade,[1] these diseases are still leading causes of childhood deaths worldwide, causing 2 million deaths each year. The latest data show that in 2011 there were 0·7 million diarrhoea deaths and 1·3 million pneumonia deaths in children younger than 5 years. Second, 15 highly cost-effective interventions exist that, if applied, would prevent 95% of diarrhoeal deaths and 67% of current pneumonia deaths in children younger than 5 years by 2025.[2] Third, several innovations, and knowledge about how to best deliver these interventions are now available, including Integrated Management of Childhood Illness (IMCI) at facilities, Integrated Community Case Management (iCCM) for pneumonia, diarrhoea, and malaria in the community, and new vaccines. Fourth, we now have an improved understanding and recognition of the clustering of risk factors and infections and therefore opportunities for intervention throughout the 1000 days or longer that span the pre-pregnancy period, pregnancy, and the first 2 years of life. These promising new approaches include preconception care; care during pregnancy to reduce intrauterine growth retardation; improvements in environmental health, sanitation, and hygiene; and evidence-based strategies to improve infant and young child nutrition.[2] The importance of the removal of financial barriers to facilitate care-seeking and of public–private partnerships to achieve sustainable quality services is also being increasingly recognised. The remarkable progress in scaling up of new and effective vaccines to address the burden of childhood rotavirus infections and invasive *Haemophilus influenzae* type b and pneumococcal infections, is representative of concerted global alliances and country-level action to achieve equitable coverage.[2]

Elimination of preventable child deaths due to pneumonia and diarrhoea

With these opportunities, and as shown by progress in countries such as Bangladesh and Rwanda,[3] we can now plan for a world in which we can eliminate all preventable deaths due to pneumonia and diarrhoea. Such a goal should be set within an overall context of ending all preventable child deaths, as promoted by A Promise Renewed,[4] and defined as every country attaining an under-5 mortality rate of 20 deaths or fewer per 1000 livebirths, and reductions in inequity for all

Key messages

- Worldwide, substantial reductions have occurred in the number of deaths due to pneumonia and diarrhoea, but these diseases are still the leading causes of preventable child deaths, with 0·7 million deaths due to diarrhoea and 1·3 million pneumonia deaths in children younger than 5 years in 2011
- Modelling in this report shows that the goal of ending preventable deaths from pneumonia and diarrhoea by 2025, with a target of fewer than three deaths per 1000 livebirths for pneumonia and one per 1000 livebirths for diarrhoea is achievable
- Scaling up of existing highly cost-effective interventions can prevent 95% of diarrhoeal deaths and 67% of pneumonia deaths in children younger than 5 years by 2025 if delivered at scale, but countries need to prioritise interventions on the basis of their local context
- A five-step approach to planning and management of national and subnational pneumonia and diarrhoea programmes can rapidly lead to scale up in coverage of cost-effective interventions
- The cost to achieve the end of preventable deaths from pneumonia and diarrhoea by 2025 is estimated to be around US$6·715 billion

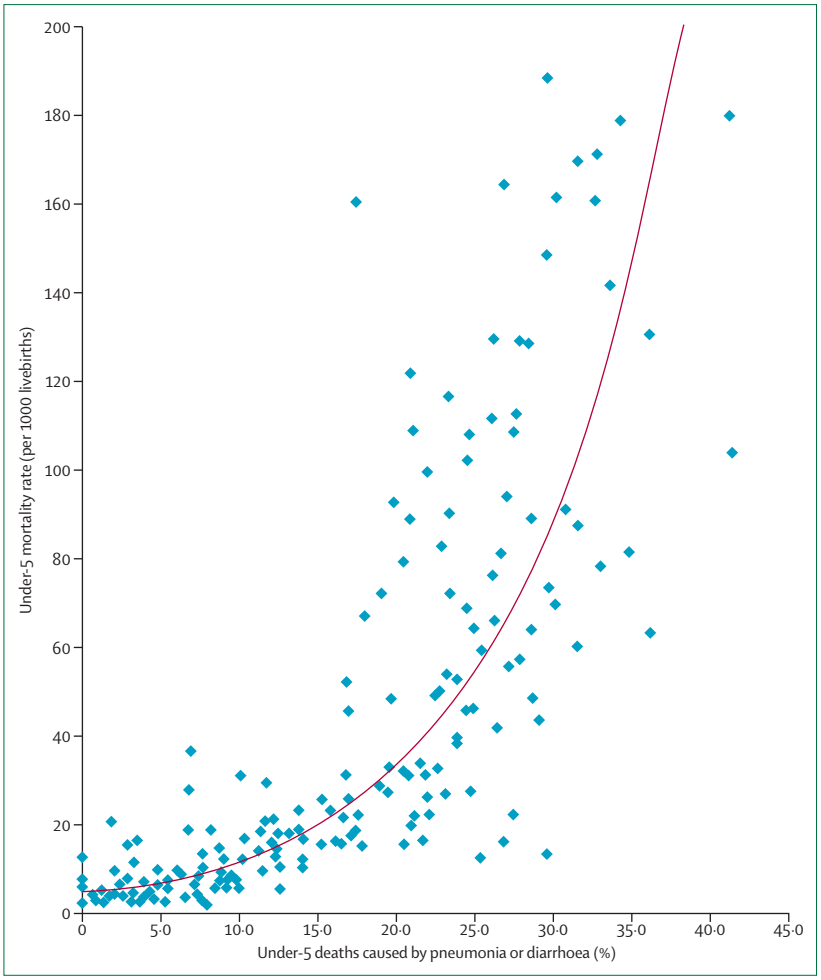

Figure 1: **Under-5 mortality rate (per 1000) versus percentage of under-5 deaths attributed to pneumonia and diarrhoea in 2010**
The log-linear regression line is shown. Data taken from references 5 and 6.

countries. This target has three key features. First, it represents the highest rates of overall under-5 mortality presently reported by Organisation for Economic Co-operation and Development (OECD) countries, and thus is a reasonable standard that is attainable with existing devices, approaches, and interventions. Second, the goal will enhance equity between countries, since it will need greater worldwide support for countries that are furthest from reaching the target or that are progressing at the slowest rate. Third, the goal will also enhance equity within countries, since the 20 deaths per 1000 livebirths target represents an upper boundary, and countries that are already close to or have fewer than 20 deaths per 1000 will need to make continued progress, which can only be achieved by a reduction in high mortality in at-risk subpopulations within countries. Even in countries with the highest mortality rates, the burden of child deaths is unevenly distributed. Specific targeting of high-mortality regions can accelerate the achievement of child survival goals.

We propose that a similar approach could help to eliminate all preventable deaths from pneumonia and diarrhoea. Although the global estimates for under-5 mortality from pneumonia and diarrhoea (including deaths from these diseases in the neonatal period) account for 29% (18% pneumonia, 11% diarrhoea) of total under-5 mortality,[5] this percentage varies widely by country and by region, from 14% in the WHO Americas region (10% pneumonia, 4% diarrhoea) to 33% in the South-East Asia region (22% pneumonia, 11% diarrhoea). Figure 1 shows a country-by-country analysis, in which estimated 2010 under-5 mortality rates[6] were compared with estimates of the total proportion of under-5 mortality attributable to pneumonia and diarrhoea.[5] The trend line shows that progress in the high-mortality countries is even more dependent on progress in reducing pneumonia and diarrhoea mortality than in countries with low mortality rates—a key consideration for reductions in overall worldwide inequity in child mortality outcomes. Similarly, in high-mortality countries, targeting of areas with a high burden of pneumonia and diarrhoea deaths will accelerate the rate of decrease in under-5 mortality.

On the basis of the estimates in figure 1 (and the fact that the Americas profile for pneumonia and diarrhoea mortality is similar to that of the upper limit of OECD countries), and within the overall target of total under-5 mortality of 20 per 1000, we propose targets of fewer than three deaths per 1000 livebirths from pneumonia and fewer than one death per 1000 livebirths from diarrhoea. These targets are reasonable, because these values constitute rates at which preventable deaths from these diseases have been avoided by other countries in the past. Thus, this goal is bold but achievable. Indeed, such low mortality rates have already been reached in China and Mexico, and panel 1 outlines how this could be achieved for 74 Countdown countries, on the basis of the annual reduction rates being achieved in countries such as Rwanda and Bangladesh. Figure 2 shows the aggregate reduction achieved across these countries for both diarrhoea and pneumonia mortality rates, showing that the aggregate values in 2025 are similar to the proposed targets of one death per 1000 lives births for diarrhoea and three deaths per 1000 livebirths for pneumonia. We investigate the policy and investment shifts necessary to reach such targets by 2025 (or by 2035 for countries in which the mortality rates are presently far higher than these targets).

Opportunities to accelerate progress

The median coverage of oral rehydration solution has decreased since the late 1980s, with only a third of children receiving this straightforward life-saving intervention, and the number of people without sanitation has decreased very little in the past two decades.[7] Despite evidence of effectiveness, coverage of zinc for the treatment of diarrhoea is only a fraction of that of oral rehydration solution, and access to these life-saving commodities is

variable.[8] However, good reasons and new opportunities exist to believe that a sharp increase in the rate of decrease in cause-specific deaths can be attained (panel 2). Large-scale success has been achieved with consistent focus to overcome the bottlenecks against increasing coverage. For example, in Niger, such success required strengthening of primary care posts that prioritised the provision of essential interventions such as oral rehydration solution.[10] For larger countries, such as Bangladesh, provision through public health systems was insufficient and the role of non-governmental providers has been crucial.[11] Poor quality of care is another bottleneck. In Rwanda, the use of performance-based payments has led to substantial improvements in care quality.[12] Evidence also suggests success through specific programme implementation innovations such as IMCI in both health facilities and in the community.[13–15] An increasing number of examples exist of innovative public–private partnerships that are increasing coverage of essential interventions. In Benin, for example, by working with the major wholesalers to market OraselZinc (Population Services International, France/India) through the commercial distribution channels for fast-moving consumer goods (kiosks, drug vendors, and retail shops), access to and availability of OraselZinc increased from 36% to 58% within 1 year.[16] The point-of-use water disinfection and zinc treatment (POUZN) project in India is another scheme that worked with commercial partners to produce and sell zinc. Through local non-governmental organisations, about 2000 medical practitioners and 500 drug sellers were identified to provide access to zinc and oral rehydration solution in rural areas. High rates of increase in use of recommended point-of-use water treatment products were also reported. After the initial phase, the project was scaled up to include about 20 000 rural medical practitioners and 5000 drug sellers, who served a catchment area of about 13 million people.[17]

Broader challenges to progress

The examples of success and new opportunities need to be better shared and understood across countries to improve the delivery of crucial health interventions. However, four important paradoxes that are presented in the previous papers draw attention to broader challenges in the goal to end preventable deaths from diarrhoea and pneumonia. First, despite the impressive global reductions in numbers of deaths, pneumonia and diarrhoea mortality rates are still high, and the link with undernutrition and stunted growth is ever present.[1] Consequently, the gains in most countries have been insufficient to propel them towards achieving Millennium Development Goal 4 (a two-thirds reduction in under-5 mortality by 2015), and the situation has even worsened in some countries.[6] Second, although the poorest children live in the most squalid conditions and are most likely to benefit from the scale-up of interventions, many countries that have increased coverage of life-saving interventions have seen inequities in incidence and disease-specific mortality widen.[18] Third, research and innovation have led to the development of new and powerful cost-effective interventions, ranging from zinc for the treatment of diarrhoea to bacterial protein–polysaccharide conjugate vaccines for pneumonia.[2] Yet, the rate of adoption of these interventions is highly variable and is often slow, especially in settings with the greatest need, as manifest

Panel 1: Ending of preventable child deaths from pneumonia and diarrhoea by 2035

We investigated various scenarios to establish whether rates of three per 1000 livebirths one per 1000 livebirths for pneumonia and diarrhoea mortality, respectively, would be feasible in 74 Countdown to 2015 countries that account for 98% of under-5 mortality, by the years 2025 and 2035. The table shows actual estimated rates of change for 2000–10 of cause-specific mortality for three countries in Africa and Asia that have made good progress. On the basis of this experience, we applied a rate of decrease of 10% per year for pneumonia-specific under-5 mortality and 12% per year for diarrhoea-specific mortality. For 2025, this yielded an upper limit of eight per 1000 pneumonia deaths and four per 1000 diarrhoea deaths, which are substantially higher than the universal targets. However, by 2035, these upper limits were reduced to three per 1000 for pneumonia and one per 1000 for diarrhoea. Figure 2 shows the overall change in the 74 countries, indicating that, at least in aggregate, the targets would be attainable by 2025, and every country would be below these upper limits by 2035. From these analyses, we conclude that the bold goal of ending all preventable child deaths from pneumonia and diarrhoea is achievable by 2035, and that an intermediate target of a combined mortality rate from diarrhoea and pneumonia of fewer than four per 1000 by 2025 in the 74 Countdown countries is also feasible.

	Pneumonia	Diarrhoea
China	–10·1%	–10·9%
Rwanda	–9·5%	–13·4%
Bangladesh	–9·5%	–12·2%

Data taken from reference 3.

Table: **Annual rates of change in cause-specific mortality 2000–10.**

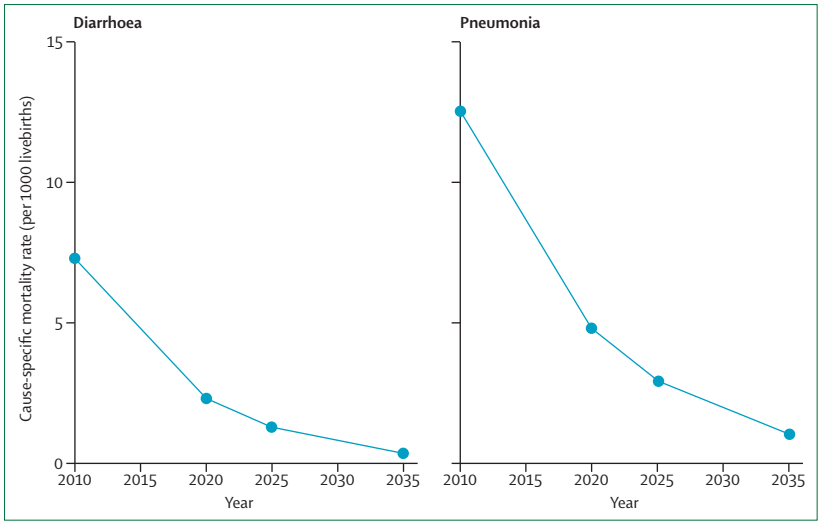

Figure 2: **Aggregate reduction in cause-specific mortality across 74 Countdown countries**

Panel 2: **Four opportunities for further acceleration**

1) Increased financial resources

An increase of seven times in development assistance for health has occurred in the past decade. Unfortunately, resources for the two leading causes of child deaths have not increased at the same rate. However, the success of global health initiatives such as the Global Alliance for Vaccines and Immunization (GAVI) and the recent UN Commission on Life-Saving Commodities for Women and Children do offer opportunities to increase financial resources for pneumonia and diarrhoea. By the end of 2012, 21 developing countries had already started to introduce the pneumococcal vaccine with GAVI support; more than 20 GAVI-eligible countries had been approved for support for vaccines against rotavirus; and 70 countries had introduced the pentavalent vaccine, which protects against important causes of pneumonia such as *Haemophilus influenzae* type b. The UN Commission has led to the establishment of a reproductive, maternal, newborn, and child health fund that is attracting new resources to support increasing use of essential commodities, such as oral rehydration solution or zinc, and amoxicillin.

2) New products and technologies

Beyond vaccines, several other innovations have occurred. For example, the production and marketing of flavoured oral rehydration salts or copackaging with zinc in collaboration with private sector companies can substantially increase purchase and use of this life-saving intervention.[2] More accurate but robust and straightforward devices to count the breathing rate of sick children and pulse oximeters to accurately measure blood oxygen levels in places with intermittent power are proving to be crucial to improve the diagnosis and appropriate treatment of pneumonia.

3) Integrated service delivery

These innovations are helping a new integrated service delivery model that could also contribute new resources and expertise. For example, the Global Fund to Fight AIDS, Tuberculosis and Malaria, and the President's Malaria Initiative have recognised that substantial overlap exists between pneumonia and malaria, both in signs and symptoms and in case management; this overlap can now be differentiated with rapid diagnostic tests and breath counters. Support for the use of such tests by health providers, especially in the community, combined with the availability of appropriate treatment for malaria and pneumonia is already increasing treatment coverage substantially in many of the world's poorest countries. Pneumonia in HIV-positive children is also substantial in countries with a high HIV burden. Wider coverage of prevention of mother-to-child transmission services will affect this burden, as has been shown in South Africa.[9]

4) A health systems approach

Countries are achieving increased coverage through establishing a continuum of care approach: from the community (iCCM) to first-level facilities (IMCI) and district-level facility care (referral care). This increased coverage provides a platform for the linking of preventive (eg, Expanded Programme on Immunization, and prevention of mother-to-child transmission), protective (infant feeding and improved sanitation), and therapeutic (iCCM, IMCI, and referral care) services. Strong monitoring systems need to be established that build upon those already in place such as Expanded Programme on Immunization to expand to monitoring of treatment outcomes. These systems are especially important as vaccines for pneumonia and diarrhoea are introduced and scaled up, which results in changes in epidemiology and disease characteristics—eg, the necessity to treat severe pneumonia with hypoxaemia might increase.

by high child mortality rates. Overall research funding for these two leading causes of childhood deaths is very low and urgently needs to be increased. For example, research funds for diarrhoea are estimated to be roughly US$10 per disability-adjusted life-year (DALY), compared with more than $100 per DALY for diabetes.[19]

Thus, whereas progress has been made worldwide in reducing childhood deaths attributable to pneumonia and diarrhoea, as evidenced by a decrease from an estimated 3·6 million deaths in 2000 to 2 million in 2011, this progress has been very uneven across regions, within regions, and within countries,[6] which is the net result of a complex interplay of many factors that operate globally, regionally, nationally, and subnationally. Figure 3 uses a protect, prevent, and treat framework to show both some of the main drivers exerting upward pressures on the incidence of the two diseases and some of the crucial interventions that address the proximal determinants of the child pneumonia and diarrhoea burden.

Increasing inequalities in outcomes point to the differences in exposure to underlying determinants. For example, 1·1 billion people still practise open defecation, more than half of whom live in India.[20] Recently promoted approaches that focus on behavioural drivers to build demand for sanitation, such as community-led total sanitation,[21] and on the creation of sustainable markets in sanitation products show promise, but still need to be implemented on a large scale and to be proven as sustainable in the long term. Historical experience in developed countries showed a substantial reduction in child mortality from pneumonia and diarrhoea before the deployment of the more medical public health interventions on which much health sector programming now focuses. For example, death rates in infants (younger than 1 year) in New York City decreased substantially from more than 120 per 1000 in 1900, to less than 40 per 1000 in 1940, and in the USA overall, mortality rates from diarrhoea and pneumonia declined from about 50 per 1000 in 1912, to 18 per 1000 in 1937,[22] which predates the introduction of vaccines and antibiotics for the control of infectious diseases. These substantial reductions in mortality were driven by advances in infant feeding and nutrition, improvements in sanitation, and the use of chlorine to disinfect public water supplies. A recent analysis of the striking fall in child mortality in China during the past two decades also supports the importance of combining a focus on scaling up of life-saving interventions with addressing of broader social and environmental determinants.[23]

Action steps

Strengthen global and national leadership

The absence of visibility and prioritisation given to pneumonia and diarrhoea was the most common reason for the absence of progress given by participants in many multi-country consultations.[3] A concerted effort to build up country stewardship and political will to make elimination of preventable diarrhoea and pneumonia deaths a tangible and visible imperative is needed. Global processes, including Every Woman Every Child; A Promise Renewed; the UN Commission on Life-Saving Commodities for Women and Children; and the Integrated Global Action Plan for the Prevention and

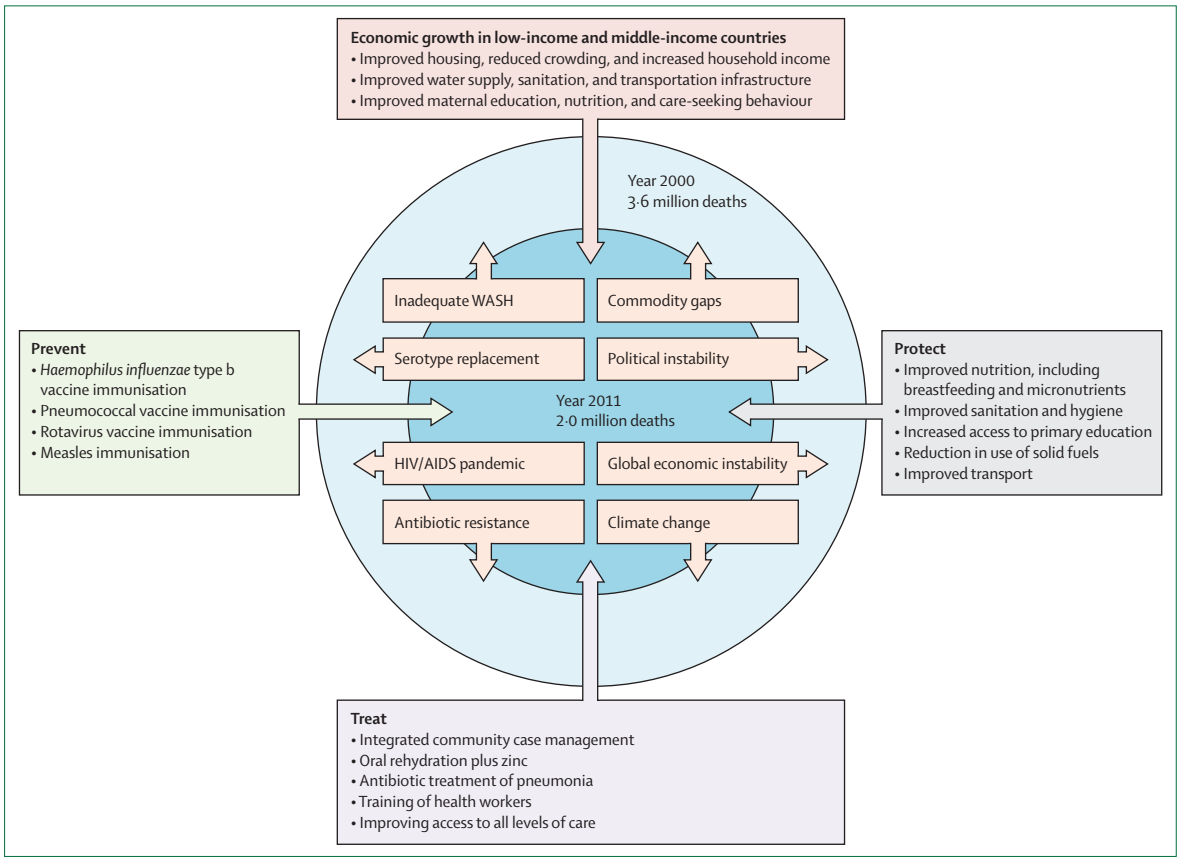

Figure 3: **Global drivers of pneumonia and diarrhoea mortality in the years 2000 and 2010**
WASH=water supply, sanitation, and hygiene.

Control of Pneumonia and Diarrhoea, launched to coincide with the Series (panel 3), offer a policy framework and important opportunities to engage with political and civil society leaders about the importance of these two leading preventable causes of childhood deaths.

Foster intersectoral collaboration

The complex interplay of the aforementioned social determinants of health differs depending on the context. This fact emphasises the crucial importance of capacity building and coordination across the different levels of decision making for planning, investment, and action to collect, interpret, and apply relevant local information to guide action, which often needs innovative ways of connecting across different parts of government. For example, in Ethiopia, a memorandum of understanding has been established between the Ministry of Health, the Ministry of Water and Energy, and the Ministry of Education to increase the coordination of water supply, sanitation, and hygiene (WASH) services. This step has led to innovative WASH approaches such as the National Hygiene and Sanitation taskforce, which has developed a national handwashing strategy, with a campaign to target schoolchildren.

Prioritise interventions

Even with interventions mainly within the manageable control of the health sector, and with the increasing number of interventions and programme strategies it becomes more and more difficult for policy makers to set evidence-based priorities. Moreover, the cost-effectiveness of interventions can vary with the context, which emphasises the need for a planning process that can take the local context into account. A simple framework and practical devices to prioritise interventions and identify key sources of information resulting in clear guidelines is essential.[24,25]

On the basis of experiences of working with national stakeholders to define opportunities to accelerate reductions in child mortality, such as Nigeria's Saving One Million Lives initiative,[26] we propose a five-step approach to support planning and management of national and subnational responses to childhood pneumonia and diarrhoea, with a particular focus on the inequities and underlying causes of both diseases (panel 4). The approach differentiates direct interventions that aim to reduce the incidence, morbidity, and mortality from the two diseases; strategies that address the bottlenecks facing the most vulnerable groups; and

investments in other sectors, most notably water and sanitation. This differentiation is achieved in the third step of the approach with the use of the available devices to support policy in resource-poor settings, such as the Lives Saved Tool, the CHNRI method, the EQUIST model, or other similar devices that have been reviewed recently.[24,25] The approach promotes prioritisation of efforts on the basis of a detailed analysis of country epidemiology, health system capacity, and context, and assumes major efficiency gains as programmes focus on increasing effective coverage of interventions in high-risk groups.

Panel 3: Ending Preventable Child Deaths from Pneumonia and Diarrhoea by 2025: an integrated Global Action Plan for the Prevention and Control of Pneumonia and Diarrhoea (GAPPD)

UNICEF and WHO have led an extensive multistakeholder process to address pneumonia and diarrhoea in an integrated plan that will substantially reduce global and national mortality and morbidity from these two diseases. Previously addressed separately, pneumonia and diarrhoea should now clearly be addressed in a coordinated manner. The determinants are often the same; thus, the preventive strategies, and delivery platforms through health-care facilities, families, communities, and schools are similar.

The GAPPD aims to provide a guide for national governments and their partners to plan integrated approaches for the prevention and control of pneumonia and diarrhoea. The GAPPD does not present a change of direction in terms of what needs to be done but it identifies opportunities to better integrate activities to capture synergies and efficiencies. It emphasises innovations related to public–private partnerships, intersectoral collaboration, product innovation, and integrated clinical management.

GAPPD defines the roles for all stakeholders—governments, international organisations, civil society, academics, and the private sector—and calls on all to play their part in ending preventable deaths from pneumonia and diarrhoea.

Panel 4: Five-step process of translation of evidence into policy nationally and subnationally

1) Understand disease epidemiology and intervention packages in every context
Define high-risk populations on the basis of programmatically useful indicators (eg, urban or rural, above or below target mortality rate, excluded minorities, and so on); the composition of the burden, so-called horizontal determinants of the burden (eg, housing, nutrition, water, sanitation, access to care, and asset index) and so-called vertical coverage of cost-effective interventions for high-risk groups (eg, *Haemophilus influenzae* type b vaccination, oral rehydration solution for diarrhoea, and community case management with antibiotics for pneumonia.

2) Understand the health system in every context
Identify the determinants of coverage rates and the key bottlenecks, the quality of intervention delivery, and the cost of scale up for high-risk groups.

3) Understand existing investments, barriers, and future potential in every context
Define the costs of ongoing programmes in every context. Identify alternative delivery and demand creation strategies and their potential effectiveness to overcome existing bottlenecks for high-risk groups; estimate the reduction in under-5 mortality rate, adhering to the existing policies; and consider the outcomes on the basis of on evidence-driven alternative policies.

4) Establish an enabling environment
Focus on establishing and realising the policies needed for the availability and use of commodities at different levels of the health system. Include outreach to other sectors with an effect on health, such as education and sanitation.

5) Be accountable for progress
Establish indicators for monitoring, regular reporting of progress, including equity focus, and ultimately outcomes, with clear lines of responsibility for taking action on the basis of rates of progress.

Increase investment in research

Health policy and systems research, which includes operations and implementation research, will have an important part to play in addressing major knowledge gaps to enable progress in mortality reduction. Extensive research priority-setting exercises have identified the most important research gaps. Within both short and long time frames for diarrhoea, improvements in the acceptability and effectiveness of oral rehydration solution and zinc were ranked as the most urgent research priorities.[27] For pneumonia in a short timeframe, studying of barriers to health-care seeking and access; increase of coverage with available vaccines; and assessment of the potential to scale up antibiotic treatment through community health workers, were all at the top of the list of priorities.[28] Common to both diseases were research priorities related to assessment of the effect of iCCM and IMCI on early and equitable administration of appropriate treatment.

Ensure accountability for results

Accountability for results and resources is crucial for transparency and good governance and for the effective implementation of the adopted policies. The recommendations of the Commission on Information and Accountability[29] and framework provides a unique opportunity for countries and the global community to focus on health information as a prerequisite for targeting of investment and addressing of inequities in women's and children's health. The 11 core indicators cover essential interventions for the prevention and control of pneumonia and diarrhoea, and thus are reported on annually. The independent Expert Review Group's first report drew attention to the role of the Countdown to 2015 scheme in tracking progress in coverage of key interventions across the continuum of care. The Countdown to 2015 biennial reports track progress in and between countries in coverage of the key interventions, including those for pneumonia and diarrhoea.[30] Countries are encouraged to use these indicators in their annual national health sector reviews and to do national countdowns to monitor coverage subnationally on a district-by-district basis, allowing for adjustment in implementation based on the districts or areas with the greatest need and thus enhance both equity and local accountability.

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Conclusions

The magnitude of the effort needed to eliminate preventable deaths from pneumonia and diarrhoea should not be underestimated: this Series and the accompanying Integrated Global Action Plan for the Prevention and Control of Pneumonia and Diarrhoea provide a very clear set of priorities and actions that, if implemented, offer an unprecedented opportunity to eliminate preventable child deaths caused by these two diseases. The cost of these actions is estimated to be an extra $6·715 billion by 2025,[2] whereas the cost of no action would be an additional 1·5 million childhood deaths every year.[2] The remaining task is to leverage the evidence base, policy coordination, and political will mobilised worldwide, under such umbrellas as Every Woman Every Child, A Promise Renewed, the UN Commission on Life-Saving Commodities for Women and Children, and the Integrated Global Action Plan for the Prevention and Control of Pneumonia and Diarrhoea, into specific policy advice and action nationally and subnationally, with transparent processes and devices owned by local stakeholders.

A concerted effort to use a systematic approach of sharpening of evidence-based planning and implementation, ensuring of effective systems of accountability for results at all levels, and building of the stakeholder movement to sustain and increase these efforts is at the heart of the call to action to end preventable deaths from pneumonia and diarrhoea by 2025, and can be the forerunner to a future with zero preventable child deaths.

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Contributors

MC, EM, JB, and ZAB conceived the paper and wrote the first draft. IR, HC, and MC conceptualised the five-step process in panel 3 and drafted parts of the text; REB and LL led the analysis of the possible mortality reductions and contributed to editing of the report. All authors reviewed the final version for important intellectual context.

Conflicts of interest

We declare that we have no conflicts of interest.

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