

## Child survival V

# Knowledge into action for child survival

*The Bellagio Study Group on Child Survival\**

**The child survival revolution of the 1980s contributed to steady decreases in child mortality in some populations, but much remains to be done. More than 10 million children will die this year, almost all of whom are poor. Two-thirds of these deaths could have been prevented if effective child survival interventions had reached all children and mothers who needed them. Translation of current knowledge into effective action for child survival will require leadership, strong health systems, targeted human and financial resources, and modified health system to ensure that poor children and mothers benefit. A group of concerned scientists and policy-makers issues a call to action to leaders, governments, and citizens to translate knowledge into action for child survival.**

This year, more than 10 million children younger than 5 years will die, most from easily preventable causes, and almost all in low-income countries or poor communities in middle-income countries.<sup>1</sup> Although the child survival revolution of the 1980s greatly reduced child mortality, the tasks of preventing child deaths and addressing inequities remain unfinished.

The late Jim Grant, then executive director of UNICEF (United Nations International Children's Emergency Fund), launched the Child Survival Revolution in 1982.<sup>2</sup> This initiative had the support of all major international organisations active in child health, as well as national and regional leaders. At the World Summit for Children in New York, USA, in 1990, 71 heads of state met to pledge their support. Many countries made substantial progress in reducing child mortality over the 15 years following the launch of the Child Survival Revolution: the average number of under-5 deaths fell from 117 per 1000 in 1980 to 93 per 1000 in 1990.<sup>3</sup>

Since the mid-1990s, however, this momentum has been lost, and gains in child survival have slowed or been reversed.<sup>4</sup> The child summit goal for the 1990s—reducing child mortality by a third or to less than 70 per 1000, whichever was lower—remained far from being achieved. Instead of a 33% reduction, worldwide under-5-years mortality declined by only 10%, from 93 deaths per 1000 in the early 1990s to 83 per 1000 in 2000.<sup>1</sup> The mean regional under-5 mortality rates in 2000 were 175 per 1000 in sub-Saharan Africa and 100 per 1000 in south Asia.<sup>3</sup> Diphtheria, pertussis, and tetanus (DPT3) immunisation coverage has stalled at less than 70% in southern Asia and declined in sub-Saharan Africa from 60% in the early 1990s to 46% in 1999.<sup>5</sup>

Worldwide averages for mortality of children younger than 5 years mask enormous differences in progress at regional and country levels. In 2000, rates of child survival in sub-Saharan Africa had not yet reached the level attained in 1950 in the USA.<sup>4</sup> In Angola and Niger, 25 in every 100 babies born will die before the age of 5 years; in Europe the comparable rate is fewer than one in every 100.<sup>5</sup>

Children who are poor are bearing more than their share of this tragedy.<sup>6,7</sup> The child survival revolution, for all its accomplishments, left large inequalities in child health.<sup>7</sup> For example, a child born in the poorest fifth of Indonesia's population is four times more likely to die before reaching 5 years than one born in the wealthiest fifth.<sup>5</sup>

Are we faced with new epidemiological challenges? We believe the answer is no, except in the few countries with high prevalence of HIV/AIDS in women before or during their childbearing years. The main killers of children today are diarrhoea, pneumonia, and malaria, just as they were in 1980.<sup>8</sup> Birth asphyxia and neonatal sepsis remain responsible for most neonatal deaths.<sup>8</sup> The importance of undernutrition as an underlying cause of death has been recognised for many years and has recently been reconfirmed.<sup>9</sup> The clinical challenges of saving children's lives have remained much the same as in 1980, but today there are better ways to respond to them. In the second paper of this series, Jones and colleagues<sup>10</sup> reported that of 9·7 million child deaths, 90% of deaths of under-5-year-olds worldwide in 2000, two-thirds could have been prevented by interventions available and affordable for widespread use today.

HIV/AIDS is a new epidemiological challenge, an epidemic that is costly to prevent among young children.<sup>11,12</sup> However, other diseases and underlying conditions that can be treated easily and inexpensively cause almost 19 in 20 preventable child deaths.<sup>8</sup> HIV/AIDS is not, and will not become, a major killer of children younger than 5 years outside a few countries in Africa.<sup>13</sup>

What has changed, and presents new challenges for child survival, is the health and development environment. Many health initiatives address child deaths but in the context of specific diseases. Some are large international partnerships providing direct funds to countries, such as the polio eradication initiative or the Global Fund to Fight AIDS, Tuberculosis, and Malaria. Others concentrate on coordination, technical assistance, and advocacy, such as Roll Back Malaria. Still others focus on less common, once neglected problems such as guinea worm.

Figure 1 shows the proportions of all deaths from selected causes in 2000 that occurred in children younger than 5 years.<sup>14</sup> Although every year twice as many children die from any cause as adults die from AIDS, tuberculosis, or malaria,<sup>14</sup> child survival and maternal health have not fared well in the new competitive market-place. The initiatives frequently add yet another requirement to those of established development agencies instead of simplifying the process. For example, the World Bank and other

*Lancet* 2003; **362**: 323–27

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\*Members listed at end of report

**Correspondence to:** Dr D Gillespie, David and Lucile Packard Foundation, 300 Second Street, Los Altos, CA 94022, USA (e-mail: dgillespie@packard.org)

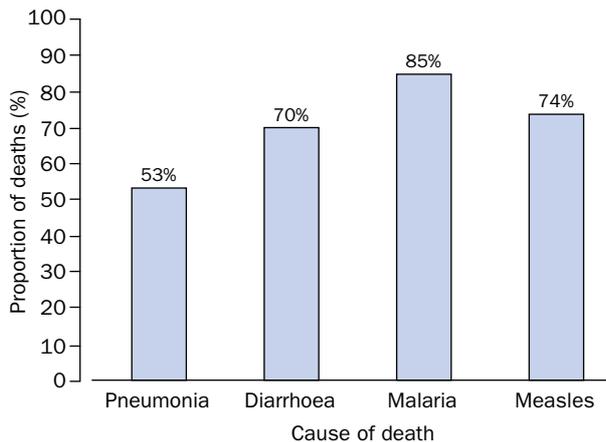


Figure 1: Deaths in children younger than 5 years as a proportion of total deaths from selected causes, 2000

development and bilateral agencies have entered the public-health arena in support of sector-wide approaches and, more recently, poverty reduction strategy papers (PRSPs) have been promoted as health blueprints. The PRSPs aim to link development outcomes, including health outcomes, with action at household and health-system levels and with macro-level policies and finances.<sup>15</sup> Yet, very few country PRSPs developed to date have a strong health component with resources allocated across sectors to increase the probability of obtaining measurable child mortality results (Claeson M, personal communication).

Although many of the disease-specific initiatives relate at least indirectly to child survival, and in this sense have expanded the resources available, the result is a set of fragmented delivery systems, rather than a coordinated effort to meet the needs of children and families. Effective delivery of services, especially where health systems have limited capacity, requires careful thinking about how to make the best use of each contact with the target population. In today's environment of disease-specific initiatives, cross-disease planning, implementation, and monitoring are hard to establish and maintain.

### New knowledge for child survival

The four previous reports in this series have brought together new analyses and perspectives.<sup>7,8,10,16</sup> Together, they constitute sufficient grounds to call for renewed action. We have summarised the evidence below. The table highlights gaps in evidence and urgent needs for further information.

First, renewed action on child survival is called for because advances in child health epidemiology have strengthened the basis for sound child survival programmes. More is known than ever before about the proportional distribution of child deaths, the cause-specific contribution of undernutrition to those deaths, and how these patterns vary across countries.<sup>8</sup> These variations, and differences in health-system and other local strengths, mean that the capacity of countries to obtain and use information to support child-health programmes will be a determining factor in reducing child mortality.<sup>17-19</sup> No single formula for reduction of child mortality can be applied across countries on the basis of their geographical location, income level, and epidemiological features.

Second, interventions to prevent or treat the major causes of child death are more effective now than in the past, and new interventions are on the horizon.<sup>10</sup> Even on

the most conservative assumptions, 63% of child deaths can be prevented with the interventions available and feasible today.<sup>10</sup>

Third, findings from large-scale population surveys<sup>16</sup> show that these child survival interventions are not reaching the children and mothers who need them. Fewer than 5% of children in regions of Africa with very high prevalences of malaria are using insecticide-treated materials to prevent malaria.<sup>16</sup> Fewer than four in ten infants are breastfed exclusively for 6 months, partly because their mothers are unaware of the protective effects of this practice.<sup>16</sup> These and other delivery failures, and the recognition that a healthy child needs many and coordinated preventive and therapeutic interventions,<sup>20</sup> demand renewed action.

	Action needed
<b>Epidemiology</b>	
Up-to-date information or national-level data on child mortality levels and causes	Expanded epidemiological capacity and funding at country level, to support sentinel site surveillance and improvement of vital statistics
Improved estimates of coverage for child survival interventions	Population-based demographic and health-like surveys, including coverage information, done at regular intervals
Valid data on co-morbidity and synergies in causes of death	Further analysis and new data-collection efforts with full details on symptoms at time of death
Improved understanding of deaths by cause in the neonatal period	As above
<b>Child survival interventions</b>	
Vaccines for pneumonia, diarrhoea, and malaria	Continued basic research on vaccines, micronutrient supplementation, and other promising interventions
Better understanding of potential effect of micronutrients, alone and in combination	As above
Improved interventions to prevent and treat undernutrition, and to promote breastfeeding	Effectiveness assessment through locally appropriate delivery strategies, including measurement of effect and costs
Information on costs of different interventions	As above
<b>Delivery strategies for child survival and maternal health interventions</b>	
Evidence on how to achieve high and equitable coverage and population impact in different epidemiological, health system, and cultural settings	In-depth field research by country-level investigators and programme staff, with international partnerships if needed
Evidence on the contribution of various technologies to the achievement of population impact	Development of monitoring methods for use at district and national level, and capacity to use them
Evidence on how to go to scale with interventions proven effective in pilot studies	As above
<b>Equity</b>	
Routine monitoring of results at national level disaggregated by wealth, sex, and other relevant population subgroups	Development of indicators, methods, and guidelines for analysis and reporting. Capacity building in equity measurement and monitoring at all levels. Child health and coverage surveys for equity measurement
Feedback of equity results to the population, health workers, and decision makers at national and international level	As above
<b>Monitoring progress</b>	
Data for financial investments in child survival from governments, donors, and technical assistance partners	Standard indicators and reporting mechanism for financial investments in child survival
Comparable data at country level on child mortality, overall and by equity indicators	Mechanism and independent responsible bodies to implement and report on monitoring
<b>Filling the gaps in the evidence base for child survival</b>	

Fourth, inequities in child health have been documented clearly and must be addressed.<sup>7</sup> Children who are poor are more likely than their richer peers to be exposed to many disease agents, to have lower resistance to those risks, and to become sick. They are less likely to receive the child survival interventions that can prevent or treat even the most common diseases. Not surprisingly, then, poor children are dying in far greater numbers than children living in environments with more resources. In 2000, more than 99% of deaths of children under-5-years occurred in settings of poverty.<sup>4</sup>

New knowledge has been generated in all these four areas. Child survival must be put back on the agenda so that this knowledge can be translated into action, quickly, and used to achieve the millennium development goal of reducing child mortality by two-thirds by 2015.<sup>21</sup>

### Knowledge into action for child survival

Much can be learned from an analysis of the strengths and weaknesses of the child survival revolution of the 1980s.<sup>19,20</sup> Both the expanded programme on immunisation and national programmes for the control of diarrhoeal disease achieved high coverage with essential interventions, and led to documented increases in child survival.<sup>3</sup> Analysis of these experiences suggests some prerequisites for success.<sup>3,19,20</sup> The new environment for child survival, however, as well as the new knowledge summarised above, demands that old formulas for success be adapted and improved.

As a starting point, we propose four prerequisites for transforming knowledge about how to reduce child mortality into effective action. These prerequisites, as well as others that emerge from focused research and evaluation, can form a basis for strong and effective child survival programmes.

#### Leadership

The first prerequisite is leadership. According to Roget's thesaurus, to lead means to pioneer, to influence, to direct. To be effective, especially over time, leaders must have credibility. At present no institution or individual is out in front, pioneering responses to recognised failures and needs, influencing technical and political agendas, directing investments, and producing credible evidence that child mortality is decreasing as a result of specific actions. Strong and unified leadership was the hallmark of the child survival revolution of the 1980s, and must be re-established at international, national, and subnational levels.

#### Strong health systems

The second prerequisite is strong health systems. Even a cursory review of successful programmes in the past indicates that many were quite independent of health systems. More in-depth analysis, however, points to the limited overall effect and sustainability of such short-term, disease-specific approaches,<sup>20</sup> and has resulted in repeated calls for strengthening health systems as a basis for sustainable gains in public health.<sup>18,19</sup> The focus on the private sector diverts attention from the main issue. Although private initiatives can and should contribute, the longer-term goal must be systems of public health that are capable of defining needs, generating resources, managing programmes and people, delivering cost-effective services, and gathering and using data to improve the effect of their efforts. One reason for slow progress in concrete actions to improve health systems might be that the scope of generic health-system interventions are too broad, encompassing all functions and potential beneficiaries. Child survival

programmes can provide a needed focus for action, with swift and measurable progress as a result of improved health systems.

#### Adequate and targeted resources

The third prerequisite is resources, both human and financial, that are adequate and targeted. The best-case scenario of the Commission on Macroeconomics and Health for 2007 assumes scaling-up of large-scale investments at both the peripheral and local-hospital levels, limited by the extent to which these investments can take place within 5 years. The yearly costs of scaling-up would be about US\$1.0 billion for vaccinations, \$4.0 billion for treatment of childhood illnesses, and an additional \$2.5 billion for malaria prevention and treatment for all age groups combined.<sup>19</sup> These costs might seem expensive, but they are not when compared with the more than \$4 billion needed to add two aircraft carriers to a fleet,<sup>22</sup> or the \$17 billion yearly expenditure on pet food in North America and Europe.<sup>23</sup> Even in relation to the cost of public-health initiatives, child survival is good value for money.<sup>24</sup> Application of what we know can reduce child mortality by two-thirds<sup>10</sup> and achieve the ambitious millennium development goal.<sup>21</sup> And, as noted by the Commission on Macroeconomics and Health, a substantial proportion of the required funds could be mobilised from within the countries themselves; for a set of essential interventions costing \$34 per person per year and for all age-groups, even the least-developed countries could raise \$15 yearly by 2007, leaving \$19 to come from international assistance.<sup>19</sup>

Despite repeated attempts, the Bellagio group could not track investments for child survival over the past decade. Few development cooperation agencies or countries track child-survival funding levels—most cannot disentangle funds for child survival from their overall investments in health. Exceptions include the US Agency for International Development (USAID) and the World Bank. USAID records indicate that funding for child survival has decreased as a proportion of the total health budget since 2000, although in absolute dollars there has been little change (panel, figure 2<sup>25</sup>). The proportion of health, nutrition, and population lending by the World Bank directed to maternal and child health decreased between the early 1990s and 2000 (M Claeson, personal communication). Knowledge of how much is being invested is essential to measure progress and ensure accountability. Mechanisms are needed to track financial investments in child survival. Furthermore, general estimates of resource needs must be disaggregated in ways that define the needs for child survival and can link

#### Commitment to child survival has waned: an example from the USA

The USA provides one example of how international commitment to child survival has declined. Despite a healthy economy and overall increases in health funding, US development aid for child survival has declined in the past few years. In 2003, USAID's health budget is the largest ever, almost \$1.9 billion.<sup>25</sup> The planning levels for child survival, \$326 million, were the lowest since 1995.<sup>26</sup> These funding trends suggest that support for child survival has remained the same whereas funding for other diseases such as AIDS, malaria, or tuberculosis has increased. This conclusion gained further support early in February, 2003, when the US Administration proposed further reductions for child and maternal health for 2004.<sup>25</sup>

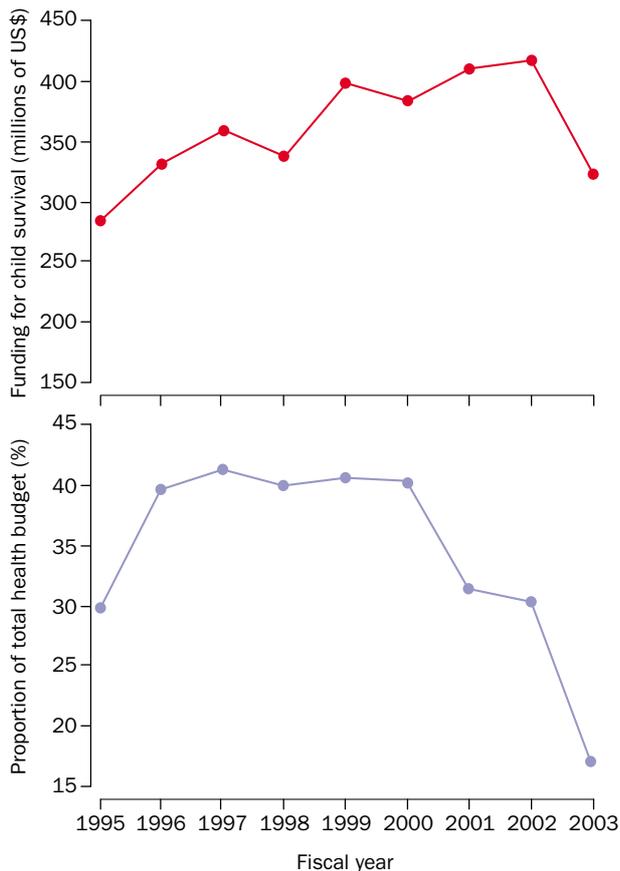


Figure 2: **Funding for child survival by the US Agency for International Development (USAID)**

Data are millions of US\$ and proportion of total USAID health budget. Data taken from reference 21. Values for 2003 are planning levels.

investments to intermediate outcomes and mortality reduction.<sup>19</sup>

Human resources are at least as important as financial resources, especially at country level and below. New ways must be identified to build local capacity, and counteract the brain drain that is depriving low-income and middle-income countries of many of their most capable citizens.

#### **Awareness and a commitment to action**

The fourth prerequisite is awareness and a commitment to action. The child survival revolution of the 1980s and early 1990s was a worldwide movement that reached beyond the public-health community to mobilise parents, teachers, village chiefs, rock stars, prominent sports people, and presidents.<sup>3</sup> The actions needed were simple, clear, and communicated consistently through all available channels. The interventions were available and generally affordable, even to the poorest. Monitoring mechanisms extended from charts on the wall of every local health post to worldwide meetings to assess progress. How many of these elements of success apply to child health programmes today?

#### **The way forward**

The lessons of the child survival revolution of the 1980s provide a solid starting point for renewed efforts. They suggest that leadership is essential, and that to be effective the leadership must encompass United Nations agencies, worldwide initiatives, private foundations and other non-governmental agencies, professional societies, and ministries of health, education, and finance. These

alliances for child survival do not exist now—they must be forged. A small group of institutions and individuals must lead the way. This leadership coalition must be sufficiently strong to rally disease-specific initiatives and build on their common interests, and to force a restructuring of how child-survival delivery strategies are planned and implemented so that they reach the poor more effectively.

#### **A call to action**

We, a group of concerned scientists and public-health managers, call on: WHO, UNICEF, the World Bank, the United Nations Development Programme, and their other UN partners to act on behalf of children by putting child survival at the top of their list of priorities. This public declaration of commitment must then be followed by concrete action. First, by establishing a process that leads to development of true leadership for child survival worldwide. Second, by collaborating in programmes to strengthen country capacity for child survival and health systems in general, with appropriate levels of financial and technical support. Third, by continuing to develop from the best available evidence guidelines that put poor children and their mothers at the centre of efforts to increase population coverage, improve health systems, and achieve the millennium development goals. Fourth, by developing and implementing systems that can help districts, countries, regions, and those working at international level to monitor coverage, equity, and progress toward achievement of the millennium development goal for child survival.

We also call on worldwide initiatives, including the Global Fund to Fight AIDS, Tuberculosis, and Malaria; Roll Back Malaria; and the Expanded Programme on Immunization and its progeny (eg, initiatives for polio eradication and reduction of measles mortality) to expand their strategies and guidelines for support. These initiatives must include explicit recognition of the need to strengthen child health and survival efforts in collaboration with UN agencies, other initiatives, and ministries of health in developing countries. Monitoring of project documentation is essential to determine whether the potential contribution of a specific activity to overall child survival efforts has been assessed, and whether needed action is included in the work plan and then implemented. These measures would go a long way to ensuring that children and mothers receive the benefits of these initiatives.

We call on all governments, ministries of health, and their bilateral and multilateral technical assistance partners to make child survival a priority, both in their own countries and in their work with low-income and middle-income countries. Countries where children continue to die at high rates must be helped to build capacity and strengthen health systems. Ministries of health in these countries must be able to prioritise the most cost-effective and equitable interventions in view of epidemiological and health services profiles in their catchment regions.<sup>19</sup> They must be supported in taking responsibility for selecting and combining proven child survival interventions (including those directed at mothers) within delivery strategies. In doing so, they must take into account the current and future competence levels of available staff and volunteers and partner institutions, the epidemiological profile, the cultures of the populations and the health staff, and the feasibility of improving health-related behaviour. To take into account these factors requires local diagnostic capabilities adequate for collection and interpretation of quantitative and qualitative information. It is the responsibility of governments, both rich and poor, to make sure that those capabilities exist.

Academic and research institutions, professional and scientific associations and educators, must also contribute their efforts and their expertise to child survival. Advocacy and focused research on how to improve child survival interventions, overcome barriers to delivery strategies, and reach poor children and mothers are the responsibility of all. The power and credibility of these groups must be firmly and publicly placed behind the child survival agenda.

The Bellagio study group on child survival has written the five papers in this series as individuals. We now call on, and shall work with, our individual institutions to see that these general prescriptions are translated into effective action consistent with the mandates of each group.

In addition, however, we commit ourselves to ensuring that there is an overall mechanism for improving accountability, re-energising commitment, and recognising accomplishments in child survival. We commit ourselves to convening a series of meetings, every 2 years, hosted by rotating institutions. Participants will be those who support child survival, who monitor interventions and delivery strategies, and other concerned individuals and organisations. The meetings will provide regular opportunities for the world to take stock of progress in preventing child deaths, and to hold countries and their partners accountable. This proposal for rolling conferences is not enough, but it is a long-term commitment to change and improve the state of child health.

We hope readers will respond to this call to action by advocating for change within their institutions, countries, and communities. In addition, we welcome open discussion in a forum established by *The Lancet* and open to all at <http://www.thelancet.com> (e-mail: [debate@lancet.com](mailto:debate@lancet.com)).

#### Contributors

The Bellagio Child Survival Study Group consists of those who participated in a team residency on "Knowledge into action: improving equity in child health", sponsored by the Rockefeller Foundation and held at Bellagio, Italy, in February, 2003. The members of the Bellagio Child Survival Study Group conceptualised the paper and contributed substantial technical input both directly and through their work on the earlier reports in the series, and reviewed and commented on drafts of the report. D Gillespie and J Bryce saw and approved the final version.

#### Writing committee

M Claeson (World Bank), D Gillespie (David and Lucile Packard Foundation, USA), H Mshinda (Ifakara Health Research and Development Centre, Tanzania), H Troedsson (WHO), C G Victora (Universidade Federal de Pelotas, Brazil).

#### Other members

S Arifeen (ICDDR, Bangladesh), R E Black (Johns Hopkins University, USA), Z Bhutta (Aga Khan University, Pakistan), J Bryce (WHO), T Evans (Rockefeller Foundation), D Gwatkin (World Bank), J-P Habicht (Cornell University, USA), G Jones (UNICEF), C F Lanata (Instituto de Investigación Nutricional, Peru), J A Schellenberg, S S Morris (London School of Hygiene and Tropical Medicine, UK), G Pariyo (Makerere University Institute of Public Health, Uganda), G Perkin (Bill and Melinda Gates Foundation), R Steketee (Centers for Disease Control and prevention, USA), A Wagstaff (World Bank).

#### Conflict of interest statement

Some investigators are staff members of WHO (J Bryce, H Troedsson), the World Bank (M Claeson, D Gwatkin, A Wagstaff), or UNICEF (G Jones). Others are technical consultants to these organisations in child health and development (Z Bhutta, J-P Habicht, S S Morris, C G Victora).

#### Acknowledgments

We thank Alice Ryan for her administrative and organisational support throughout the preparation of this series. The work on which the series has been based was supported by the Bill and Melinda Gates Foundation, the UK Department for International Development, the US Agency for International Development, and the institutions of the investigators. The Rockefeller Foundation supported a team residency at its Bellagio Study and Conference Centre in February, 2003, at which a substantial part of the thinking and writing for the series was done. The sponsors of the study

had no role in study design, data collection, data analysis, data interpretation, or writing of the report. The Cluster on Family and Community Health and the Department of Child and Adolescent Health and Development at WHO, Geneva, was the Secretariat for both the Bellagio Team Residency and the *Lancet* series. The views represented in this article are those of the individual authors and do not represent the views of their institutions.

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