In 1985, the Rockefeller Foundation published *Good health at low cost* to discuss why some countries or regions achieve better health and social outcomes than do others at a similar level of income and to show the role of political will and socially progressive policies. 25 years on, the Good Health at Low Cost project revisited these places but looked anew at Bangladesh, Ethiopia, Kyrgyzstan, Thailand, and the Indian state of Tamil Nadu, which have all either achieved substantial improvements in health or access to services or implemented innovative health policies relative to their neighbours. A series of comparative case studies (2009–11) looked at how and why each region accomplished these changes. Attributes of success included good governance and political commitment, effective bureaucracies that preserve institutional memory and can learn from experience, and the ability to innovate and adapt to resource limitations. Furthermore, the capacity to respond to population needs and build resilience into health systems in the face of political unrest, economic crises, and natural disasters was important. Transport infrastructure, female empowerment, and education also played a part. Health systems are complex and no simple recipe exists for success. Yet in the countries and regions studied, progress has been assisted by institutional stability, with continuity of reforms despite political and economic turmoil, learning lessons from experience, seizing windows of opportunity, and ensuring sensitivity to context. These experiences show that improvements in health can still be achieved in countries with relatively few resources, though strategic investment is necessary to address new challenges such as complex chronic diseases and growing population expectations.

**Introduction**

Why do some countries achieve better health outcomes than do others at similar levels of income? In 1985, the Rockefeller Foundation convened a meeting in Bellagio, Italy, to consider the experiences of four countries or regions seen as success stories: China, Costa Rica, Sri Lanka, and the state of Kerala in India. All had achieved substantially better health outcomes than other nations at similar levels of development. The result was a publication entitled *Good health at low cost* that not only dispelled the then widely believed myth that economic growth was necessary for health improvement but also identified specific factors associated with success. These were a commitment to equity, effective governance systems, and contextually appropriate programmes addressing the wider determinants of health. Politics also mattered, and every country or region was left-wing governments of various hues. 25 years later, the threats to health and the scope to respond are much more complex. Do the lessons of 25 years ago still apply?

In 2011, we revisited the original countries and regions and looked at five different places that were judged to have succeeded in either achieving long-term improvements in health and access to services or implementing innovative reforms relative to their neighbours (table). We used a conceptual framework (figure) to assess how access to health care and good health are affected by context (global and national), sector (public and private), and systems (health and non-health). The nature of the success varies; some have achieved substantial health gains whereas others have improved coverage or health system performance but are yet to see the full effect. Here, we review the experiences of Bangladesh (panel 1), Ethiopia (panel 2), Kyrgyzstan (panel 3), the Indian state of Tamil Nadu (panel 4), and Thailand (panel 5) and reflect on lessons they offer to other countries of low and middle income that are attempting to strengthen health systems in constrained or uncertain circumstances.

In 2009–11, we undertook a series of historical case studies to investigate how and why these five countries or regions made progress in health and access to care (panel 6). Our conceptual framework (figure) was based on existing published work and was used to identify a comprehensive range of factors related to health systems, public provisioning (including social programmes such as literacy and female empowerment), and politics and values underpinning the public process. This framework included a mix of quantitative and qualitative methods. Findings were validated within and across countries. Our central study question was what determines achievement? Although the complexity of health systems, and the broader political systems in which they are embedded, means that no blueprint is available for producing a strong health system, our approach meant we could identify common patterns plausibly linked to better health and health care of potential relevance beyond the countries studied. We describe here the main emerging themes focused on the health systems, with reference to topics related to other sectors and the wider context (panel 7).

**Characteristics of well functioning health systems**

Four characteristics linked to improvements in health and health care emerged from our analysis. The first was...
good governance and political commitment; the second was effective bureaucracies and institutions; the third factor was the ability to innovate, especially with respect to service delivery; and the final point was health system resilience (panel 8).

Good governance and political commitment

Governance underlies all health system functions in addition to broader social development, although the meaning of governance in relation to health systems is diverse and contested. It includes the regulatory and

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<thead>
<tr>
<th>Economy</th>
<th>Bangladesh</th>
<th>Ethiopia</th>
<th>Kyrgyzstan</th>
<th>Tamil Nadu</th>
<th>Thailand</th>
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<tbody>
<tr>
<td>GDP per person (PPP constant 2005, Int$), 2010</td>
<td>1488</td>
<td>934</td>
<td>2039</td>
<td>3522</td>
<td>7673</td>
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Demographics

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<tr>
<th>Population (millions), 2010</th>
<th>Bangladesh</th>
<th>Ethiopia</th>
<th>Kyrgyzstan</th>
<th>Tamil Nadu</th>
<th>Thailand</th>
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<tr>
<td>Infant mortality (per 1000 livebirths), 2009</td>
<td>148</td>
<td>204</td>
<td>204</td>
<td>12</td>
<td>204</td>
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<td>Under-5 mortality (per 1000), 2009</td>
<td>204</td>
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<tr>
<td>Maternal mortality (per 100000 livebirths), 2008</td>
<td>64 (male), 66 (female)</td>
<td>53 (male), 56 (female)</td>
<td>63 (male), 70 (female)</td>
<td>66 (male), 74 (female)</td>
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<tr>
<td>Life expectancy at birth (years), 2009</td>
<td>64 (male), 66 (female)</td>
<td>53 (male), 56 (female)</td>
<td>63 (male), 70 (female)</td>
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<tr>
<td>Adult HIV prevalence (% aged 15–49 years), 2009</td>
<td>&lt;0·1</td>
<td>1·4–2·8</td>
<td>0·3</td>
<td>0·44</td>
<td>1·3</td>
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Health system capacity

<table>
<thead>
<tr>
<th>Density of doctors, nurses, and midwives (per 100000), 2000–10</th>
<th>Bangladesh</th>
<th>Ethiopia</th>
<th>Kyrgyzstan</th>
<th>Tamil Nadu</th>
<th>Thailand</th>
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<td>0·44</td>
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Health system financing

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<tr>
<th>Health expenditure, total (% of GDP), 2009</th>
<th>Bangladesh</th>
<th>Ethiopia</th>
<th>Kyrgyzstan</th>
<th>Tamil Nadu</th>
<th>Thailand</th>
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<tr>
<td>Health expenditure per person (current US$), 2009</td>
<td>148</td>
<td>204</td>
<td>204</td>
<td>12</td>
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<tr>
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<td>204</td>
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Health-care coverage, most recent year available

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<tr>
<th>Births with skilled birth attendant</th>
<th>Bangladesh</th>
<th>Ethiopia</th>
<th>Kyrgyzstan</th>
<th>Tamil Nadu</th>
<th>Thailand</th>
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<tbody>
<tr>
<td>Children under-5 with diarrhoea receiving appropriate treatment (oral rehydration therapy or increased fluids, and continued feeding)</td>
<td>37% (2007)</td>
<td>27% (2011)</td>
<td>62% (2006)</td>
<td>75% (2005–06)</td>
<td>84% (2005–06)</td>
</tr>
<tr>
<td>Children with diarrhoea receiving appropriate treatment (oral rehydration therapy or increased fluids, and continued feeding)</td>
<td>68% (2007)</td>
<td>21% (2011; among those who received any oral rehydration therapy)</td>
<td>22% (2006)</td>
<td>47% (2005–06)</td>
<td>46% (2005–06)</td>
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Estimates are based on the most current data available; where possible, indicators have been drawn from a common source to allow comparability across countries. As such, some figures might differ from those reported in Good health at low cost 25 years on, which were the most current data at the time of publication. Furthermore, infant and under-5 mortality values were drawn from those estimated by the UN Interagency Group for Child Mortality Estimation, as reported in World Health Statistics 2011. These estimates are based on fitting mortality rate trend lines using all available data for every region, which is added to as new surveys are done over time. As such, every successive round of estimates could differ from and not be comparable with previous sets of estimates and the most recent underlying country data. GDP=gross domestic product. PPP=purchasing power parity.

Table: Economic, demographic, and health systems data for the five regions

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Dr Dina Balabanova, Department of Global Health and Development, Faculty of Public Health and Policy, London School of Hygiene and Tropical Medicine, London WC1H 9SH, UK
dina.balabanova@lshtm.ac.uk
managers. Alliances have to be built around shared goals, working across national government to create a vision, formulate evidence-based strategies, and monitor and how various components of the health system interact to achieve these goals. Governance also includes normative values (equity, transparency) and political systems within which health systems function. It links closely to the idea of stewardship, which was popularised by the 2000 World Health Report\(^1\) that informed our approach. Stewardship implies a role of government to create a vision, formulate evidence-based policies, design responsive services, and monitor results.\(^2^4\) Increasingly, alliances have to be built around shared goals in more pluralistic health systems.\(^8\) Governance is also linked to political will, identified in the 1985 Good health at low cost report\(^9\) as crucial to promote change, particularly in unfavourable economic circumstances.

We identified several elements of good governance. Effective leadership was manifest in a clear political vision enshrined in a plan. In Ethiopia, leadership came from the prime minister Meles Zenawi (1991–2012) and the health minister Tewdros Adhanom (2005–12), although within a strongly decentralised system. In Tamil Nadu and Bangladesh, district level leadership was important for adaption of strategies to local conditions. Political leadership need not reside entirely in government: the Thai royal family have had a key role, promoting annual public health conferences and galvanising public support for reform. Indeed, we identified several inspirational leaders and key political workers committed to improvement of health in our study countries. Leadership seemed especially important to overcome the potentially damaging results of political upheaval.

Clear priorities and realistic policy goals also emerged as important. Kyrgyzstan’s priorities were laid out clearly in its ambitious Manas plan (1996–2006), endorsed soon after independence, and subsequently the Manas Taalimi plan, which set the agenda for a comprehensive overhaul of educational institutions to achieve the health-related Millennium Development Goals.

**Panel 1: Health transcends poverty in Bangladesh**

In 1971, the Government of the newly independent People’s Republic of Bangladesh was recovering from a devastating war of liberation in which about 3 million people died and much of the country’s infrastructure was destroyed. Worse, the country had high rates of mortality, low female literacy, and vulnerability to natural disasters, particularly flooding and famine.\(^3\)\(^4\)

Despite this difficult start, Bangladesh has made enormous health advances and now has the longest life expectancy, the lowest total fertility rate, and the lowest infant and under-5 mortality rates in south Asia, despite spending less on health care than several neighbouring countries.\(^6\)\(^7\) The speed of change is striking: under-5 mortality has fallen from 202 per 1000 livebirths in 1979 to 65 per 1000 livebirths in 2006.\(^8\)\(^9\) Comparable falls have been reported for maternal mortality.\(^10\)\(^11\) Contributory factors include pronounced expansion of health-care coverage, with 75% of children younger than 1 year now fully immunised,\(^12\) and a striking decline in fertility.\(^13\) As a result, Bangladesh is on track to achieve the health-related Millennium Development Goals.

We identified several factors associated with Bangladesh’s success. A high-level political commitment to health dates back to independence. This commitment has endured despite major political changes, including transition from military to civilian rule, and has been facilitated by institutional continuity of civil servants and by partnerships between government and the non-governmental sector—an extender of government exemplified by the Bangladesh rural advancement committee.

Bangladesh has pursued four important health policies. First, in a population policy, family planning was made a priority. A separate directorate was created within the ministry of health and family welfare that secured sustained investment and developed innovative community-based interventions.\(^14\)

Second, in 1982, a drug policy established a list of mainly generic essential drugs, and the Gonooshasthaya Kendra (Bengali for people’s health centre) provided a model for small-scale integrated primary care.\(^15\) In 1983, the government established an essential drugs company to produce and distribute drugs within the public sector. This investment in indigenous expertise has created a substantial private pharmaceutical industry.\(^16\) By the 1990s, more than 80% of essential medicines were produced locally. The resulting price stability has ensured that essential medicines are affordable. In 1998, a sector-wide approach was introduced that meant the many projects of different donors could be coordinated under the umbrella of a consortium led by the World Bank while ensuring that government remained in the driving seat.

The third policy of human resources innovation created cadres of health assistants and family-welfare assistants. Early recruits were male fieldworkers who were engaged in vertical programmes against smallpox and malaria in the 1960s and early 1970s; later they were joined by female health assistants. They work mainly in rural areas, delivering immunisation, health education, and distribution of essential medicines and contraceptives. Family welfare assistants were introduced in 1976. These workers are married woman who visit other married women of reproductive age in their homes to offer advice on contraception and provide free family-planning supplies. They are supported by a rapidly expanding network of primary health centres and a strengthened supply system.

Bangladesh also pursued progressive policies outside the health sector, including education and female empowerment. Strengthening of the transport infrastructure and widening of access to electronic media facilitated access to health facilities and information. Bangladesh’s disaster preparedness, based on intersectoral planning, has also improved health system resilience.\(^17\)

Finally, Bangladesh has prioritised research and development. Innovations range from medical interventions—such as widespread implementation of oral rehydration solution, zinc to treat diarrhoea, and integrated management of childhood illness—to organisational responses, such as novel models of service delivery.
of the health system. This clear and coherent vision paved the way for the only sector-wide approach in central Asia and attracted considerable donor support. This clarity of vision was unique among former Soviet republics; much wealthier Kazakhstan only began to formulate such a plan in 2011. The Ethiopian Government led a coordinated programme including many development partners, with a focus on access to essential services in isolated areas, based on an innovative health extension programme.

We found evidence of good governance and responsiveness to diverse population needs and expectations. Investment in district health systems that could reach rural, isolated, and marginalised populations was especially apparent in Thailand, Bangladesh, and Ethiopia, all of which faced major challenges because of their large size and diverse populations. Initiatives to increase access to primary care by underserved groups entailed more home visits (Bangladesh and Tamil Nadu), scaling up of the primary care workforce (Thailand), and community engagement (Tamil Nadu and Thailand). Thus, since the early 1960s, Thailand’s health plans have reflected an explicit egalitarian ethos among leaders and a commitment to cover underserved rural populations through the expansion of health infrastructure and deployment of health workers, particularly in rural areas; this pledge was facilitated by economic growth and institutional stability. In Ethiopia, services were extended to rural areas through the health extension programme; in Bangladesh, the voluntary sector was encouraged to reach out to geographically or socially isolated groups unable to access mainstream services. In both Ethiopia and Thailand, political leaders came from, or had worked in, rural areas and ensured that reduction of inequalities between urban and rural areas—in health care and other sectors—remained on the political agenda for many years.

Continuity of reform was present, even with changes of government, in all study countries. Initial blueprints typically served as a basis for subsequent reforms and made monitoring of their implementation possible. In Kyrgyzstan, these reforms continued over 15 years and through two revolutions, thus, lessons could be learnt and effective interventions scaled up. In Tamil Nadu, remarkable advances in maternal and neonatal health (eg, by improvements to emergency obstetric care accessed by poor populations) have been attributed to a strong political commitment to health that has been unaffected by political changes. Consolidation of financial protection schemes in Thailand, leading ultimately to universal coverage in 2002, also survived many changes of government, as did the purposeful expansion—working closely with voluntary organisations—of district-level maternal and child services and managerial capacity in Bangladesh.

Careful sequencing emerges as an important factor, particularly when it allows scope for experimentation. Early progress can create momentum that overcomes opposition to later, more controversial, initiatives. The rapid achievement of high immunisation coverage in Tamil Nadu paved the way for effective family planning programmes as maternal and child health rose on the
political agenda. Coherence among reform elements is seen as a reason why Kyrgyzstan is one of the most successful reformers among former Soviet republics, despite difficult economic conditions. A commitment to evaluate changes created feedback loops to inform further reform.

Successful leaders took advantage of windows of opportunity, although this approach needed support from institutions that could implement change. In 1972, leaders drafting a new Bangladeshi constitution inserted a legal right to health and created an environment open to voluntary and donor-led initiatives that complemented state programmes. In Ethiopia, the government that came to power in 1994 established a new health policy that was attractive to external donors. The Kyrgyz Government seized the opportunity to rebuild the collapsing health system after independence, creating a receptive environment for international support. Thai public health reformers took advantage of a populist political party to get universal coverage into their election manifestos, and they supported policy design and implementation after electoral success.

Greater accountability safeguards scarce resources and boosts trust in health systems, ultimately affecting how people perceive and access them. This assurance includes measures to make financing flows more efficient and transparent, thus tackling corruption and misuse of resources. The Tamil Nadu Medical Services Corporation provided an innovative model for increasing access to essential drugs but, crucially, reducing leakage. Similarly, in Thailand, the intersectoral 2004 programme about good governance for medicines reduced inefficiencies in procurement and prescription of pharmaceuticals, achieving lower costs. It engaged voluntary organisations, such as the Rural Doctors Society, in raising awareness about corruption and unethical practices. Kyrgyzstan has undertaken a major investment in strengthening accountability and transparency, both in allocation of resources within the health system and tackling informal payments at facility level.

Effective bureaucracies and institutions

Development of sound policies and plans does not guarantee their effective implementation. In our study, functioning bureaucracies and institutions were deemed important for successful reforms. These organisations could be within the health sector (eg, ministries of health, district and subdistrict health institutions, or donor agencies) or outside it but whose operation influences the functioning of health systems (eg, other ministries, the media, or development non-governmental organisations [NGOs]). We identified several important characteristics of effective institutions: strong regulatory and managerial capacity; the ability to provide information and evidence; a stable bureaucracy; sufficient autonomy and flexibility to manage health systems effectively; willingness to engage with several stakeholders, including non-state actors and local communities; synergy between governments and donors acting together to formulate and implement policy; and use of the media as a catalyst for change.

Strong regulatory and managerial capacity were judged important, particularly where resources were scarcest. In

Panel 3: Kyrgyzstan is a regional leader in health system reform

The Kyrgyz Republic was one of the poorest of the 15 Soviet republics; its situation deteriorated even further after independence in 1991. Kyrgyzstan is mountainous, with less than 10% of land suitable for agriculture, and internal communications are often difficult. It has seen two revolutions since independence, the second associated with considerable bloodshed. Yet, despite these problems, Kyrgyzstan stands alone in central Asia as an example of successful health system reform. It has implemented a functioning health insurance system and has succeeded in shifting care out of hospitals and into a strengthened system of primary care, achieving nearly universal access.

Corresponding improvements have been noted in health outcomes. Infant mortality fell by almost 50% between 1997 and 2006, with similar declines in under-5 mortality. Life expectancy exceeds that of several of the more prosperous former Soviet republics, including Russia. Fertility has fallen by almost 50% since the 1970s, skilled birth attendants are present at 98% of deliveries, and immunisation rates exceed 90%. The reform process began soon after independence. The scale of the crisis made radical reform imperative. Kyrgyzstan turned to the outside world for assistance, recognising that the old system was unsustainable. The first of a series of health reform programmes was launched in 1996; it was promoted as an example of how government reforms would benefit the people, thus linking its success to that of the government.

One of the main goals of the health reform programmes was to restore universal health coverage. A mandatory single payer health insurance fund was created, expanding as resources have allowed and now covering more than 80% of the population. This fund is complemented by a state-guaranteed benefits package for vulnerable populations; an additional drugs package subsidises essential medicines. A prospective case-based system for inpatient care and a capitation-based scheme for primary care have been implemented. Endemic informal payments have been reduced substantially.

The inherited health system was dominated by the hospital and had an abundance of staff, but few of these health workers had the necessary skills to practise modern medicine and basic equipment and drugs were scarce. This system has now been downsized, with 42% of hospitals closed between 2000 and 2003. Community health centres were upgraded to compensate for these closures. Almost all primary care doctors were retrained as family practitioners, supported by nurses and midwives and better-trained mid-level health workers, including Soviet-era feldshers (auxiliaries). Coverage gaps in isolated mountain areas were addressed by village health committees, with volunteers contributing to basic preventative and treatment interventions.

We identified several factors associated with Kyrgyzstan’s achievements. The first was the need for reform. The inherited health system faced collapse and action was needed to maintain the legitimacy of the regime. The second was leadership. The country’s first president, Askar Akayev, identified health-care reform as a priority and gave it considerable support while opening Kyrgyzstan up to the international community, by contrast with the situation in other former Soviet republics. This move also paved the way for significant development assistance. The third factor was a functioning legislative system. Laws have survived two revolutions. They include not only those underpinning the comprehensive health reforms but also those guaranteeing the independence of civil servants, ensuring continuity of programmes (seen in the successive Manas health programmes) and staff at times of political change. Furthermore, investment in research was provided, with skilled expatriate advisers contributing substantially to capacity within the health ministry.
Panel 4: Tamil Nadu is a success story in India

Of India’s 28 states, Tamil Nadu is the seventh most populous. Despite spending only about 1% of its gross domestic product on health, this region has made great progress in improving population health. Between 1980 and 2005, infant mortality fell in Tamil Nadu by 60%, compared with 45% for India as a whole, with the greatest gains in rural areas. In 2006, this state had the third lowest rate of under-5 mortality in India, at 35.5 deaths per 1000 livebirths, compared with 74.3 deaths per 1000 livebirths for India as a whole. However, the greatest achievement in Tamil Nadu has been reduction of maternal mortality, from 319 deaths per 100 000 livebirths in the early 1980s to 111 deaths per 100 000 livebirths in 2004–06, the second lowest of any Indian state. This decline was much faster than in India overall. By 2006, fertility was below replacement rate.

A characteristic of Tamil Nadu’s success is the high health-care coverage: 90% of deliveries are attended by a skilled birth attendant, almost 25% of deliveries take place in primary health-care facilities, and 81% of infants are fully immunised. Four health system-related factors underpin these achievements.

First, Tamil Nadu was one of the first states in India to implement in large scale a multipurpose worker scheme in 1980. Women with at least 10 years of schooling were trained for 18 months to become village health nurses. Existing maternity assistants were retrained and new training facilities were built.

Second, an initiative was proposed by the Indian Government to build a network of primary health-care centres; Tamil Nadu was one of the first states to build a vast network of these facilities. By 2005, about 1500 primary health centres were open in the state, every one serving about 30 000 people on average, and a further 8680 subcentres were available—one of the highest levels of coverage of any Indian state. Innovative approaches to funding and construction were used in Tamil Nadu, including volunteer labour from communities. Obviously, to build health facilities is not enough, they must also be open and responsive to needs. 24-h opening began in the mid-1990s and is now the norm, with performance monitored monthly.

Third, immunisation schedules were scaled up rapidly, assisted by UNICEF, the Rotary Club, and the Christian Medical College in Vellore. By the early 1990s, Tamil Nadu had achieved the highest immunisation coverage in India, with the narrowest gap between the richest and poorest quintiles and between rural and urban areas. Integration of immunisation within primary care had assisted this achievement.

Finally, a reliable supply of essential drugs was established in Tamil Nadu. The autonomous Tamil Nadu Medical Services Corporation was created by the Indian Government in 1995 to purchase and distribute pharmaceuticals to public health facilities. It replaced the former drug procurement and distribution system, which had faced persistent difficulties including misuse of funds, inappropriate prescribing, high distribution costs, and stock outs. The new system, providing about 250 generic essential drugs, is credited with substantial improvements in drug supply and transparency. It has also contributed somewhat to driving down the cost of drugs supplied in the private sector.

Outside the health sector, important successes in Tamil Nadu have included female empowerment and investment in infrastructure, in particular electricity and clean water.

The achievements seen in Tamil Nadu were made possible in several ways. First, a strong commitment to health was made by successive state governments, which persisted despite frequent changes to the party in power. Second, successive health secretaries drove forward innovation and were supported by civil servants with both technical expertise and power to implement wide-ranging reforms. Sometimes, quasi-governmental organisations had to be created, such as the Tamil Nadu Medical Services Corporation, which could circumvent tardy bureaucratic processes. Third, investment in managers trained in technical public health skills and management at district level was sustained over many years, a unique cadre in India. A system of career progression has allowed Tamil Nadu to attract and retain high-calibre staff. Fourth, the partnership between government and non-governmental organisations was important, especially in the management of AIDS and tuberculosis.

Kyrgyzstan, a functioning legislative process—enabling passage of three major laws enacting changes in the health system over 4 years—accelerated the move towards compulsory health insurance and universal coverage. In Tamil Nadu, we doubt whether many innovations would have been successful without the state’s unique public health management cadre at district level, with power to plan and manage services. In Bangladesh, a district management group, with delegated authority, implemented government programmes and supervised contracts with diverse NGOs and private providers.

Managers were supported by provision of intelligence and evidence to evaluate outcomes of reforms, including widespread use of pilot schemes in Kyrgyzstan and Thailand. Tamil Nadu developed a system of mandatory surveillance and audit of maternal deaths covering both public and private sectors. This move enabled identification of systemic weaknesses, and district officers were empowered to develop locally appropriate solutions. Those ideas that proved effective were replicated in other districts, feeding into evidence-based protocols at state level. Both Kyrgyzstan and Thailand created research institutes associated with their health ministries, to support transfer of knowledge into policy. In Kyrgyzstan, monitoring and evaluation became an integral part of the policy cycle.
Stability of bureaucracy over time was regarded as important to sustain the momentum of reforms, facilitating retention of institutional memory and values. Despite great political and economic turmoil in some of the study countries, managers and planners pursued reform strategies long enough to show results. Thailand’s bureaucracy has proven especially resilient to changes of government. Containing many senior officials with substantial rural work experience, the ministry of public health was able to maintain reforms through successive 5-year health plans. Despite two revolutions, Kyrgyzstan’s health reforms remained on course (by contrast with the experiences of neighbouring countries that were politically more stable), helped by the deliberate policy of creating and retaining a cadre of managers and planners and reducing political influence over appointments.

While ensuring stability, bureaucracies also needed sufficient autonomy and flexibility to manage health systems effectively. The autonomous Tamil Nadu Medical Services Corporation was able to bypass bureaucratic procedures to introduce a system of drug procurement, increasing availability of essential drugs.

Every one of our study countries’ leaders showed a willingness to engage with several stakeholders, including non-state actors and local communities. For example, Kyrgyzstan established village health committees staffed by volunteers to deal with a wide range of local issues, including public health, and this move facilitated access to care and health education. In Thailand, district health authorities were encouraged to establish public–private partnerships that attracted resources and expertise while remaining free from political interference; these links were supported by senior ministers and the royal family. Bangladesh has seen a major expansion of NGOs operating in the health sector since independence in 1972. Some are now vast organisations—for example, the Bangladesh rural advancement committee reaches up to 110 million people through 64 000 village health workers. These NGOs have made a major contribution to national goals, such as prevention of diarrhoeal deaths in children and provision of health services to marginalised populations. Bangladeshi community-based organisations working in health and microfinance have supported locally appropriate interventions, leading to striking improvements in access to maternal and child care, but they have been less successful at affecting policy at national level because of limited capacity and influence and opaque formal consultative processes.

Involvement of more than one stakeholder is only part of the story, however. Also important was a willingness to look at a range of pragmatic solutions, such as flexible models of public–private collaboration that take account of local context. These sought to build on complementary capacities in every sector, to expand services responding to diverse needs. For example, in Tamil Nadu, the private sector undertakes 80% of outpatient visits and 60% of

Panel 5: Why and how did Thailand achieve good health at low cost?

Thailand has made impressive health gains in the past 25 years. Infant mortality fell from 68 per 1000 live births in 1970 to about 10 deaths per 1000 live births in 2006.6 This decline is one of the fastest seen out of 30 countries with low and middle income between 1990 and 2006.6 Improvements in life expectancy have also been noted, although recent progress has been limited by the spread of AIDS.6 The total fertility rate, which was 6·3 births per woman in 1965, had fallen below replacement by 1994.6 After the Millennium Development Goals (MDGs) were met, Thailand adopted country-specific targets known as MDG Plus, which underpin its development policy.59

The achievements seen in Thailand are associated with progressive expansion of health-care coverage. In 2001, the government unified a series of existing but fragmented systems to achieve near-universal health coverage even though, at the time, the region was affected by the Asian financial crisis. Health-care utilisation increased and catastrophic expenditure and out-of-pocket payments fell substantially.59

Reforms to delivery took place from the 1960s onwards as part of a series of 5-year national economic and social development plans. These measures established and sustained new hospitals. However, Thailand saw an exodus of doctors during the Vietnam War, with many Thai graduates moving to the USA. The government introduced a bonding system, requiring newly qualified doctors to spend 3 years in government health facilities, mostly in rural areas. This scheme was later extended to other health professionals. The situation was even more important for nurses, who were trained in insufficient numbers in universities under the ministry of education. As a result, in 1961, the ministry of public health established its own nursing and midwifery colleges. Furthermore, in 1982, a 2-year technical nurse diploma course was introduced in place of 4-year training. After 4 years of mandatory rural health service, technical nurses could undertake an additional 2 years of training to obtain a bachelor’s degree and professional qualification. These policies resulted in substantially augmented numbers of doctors and nurses serving in rural district health services.

Health gains in Thailand also reflect policies outside the health sector, in particular, sustained investment in rural development, encompassing infrastructure expansion and improvements in adult literacy, notably among women. Several factors were associated with these changes.

First, high priority was given to health by successive governments, reflected not only in statements by politicians but also in successive national plans. This step has transcended changes of government, both military and civilian. Thailand has had several charismatic health ministers, again under both military and civilian governments, many with a high level of technical expertise. They have championed the strengthening of rural health care and expanded coverage of maternal and child health services. However, other influential leaders in academia, health-care delivery, and civil society have played a part. In interviews we undertook with former policy makers at the Ministry of Public Health, professionalism was reported as a consistent characteristic of these individuals, rather than financial gain.

Another key factor was the role of the Thai royal family and, in particular, the popular sense of duty in serving them. The Thai monarchy has provided a point of stability during political changes and has also had an active role in promotion of health—Prince Mahidol of Songkla, father of the present king, was trained in public health.

Second, institutional capacity was important in Thailand’s success. Many senior staff have trained overseas and have benefited from stable employment in the public sector, ensuring continuity and institutional memory. Non-governmental organisations and professional bodies have also played a positive part, such as the Rose Garden group, an informal group closely linked to the Rural Doctor Society of Thailand, which provides a forum for policy debate and has helped tackle corruption.59

Finally, the ability to translate health policies into practice has been facilitated by strong managerial capacity in provinces and districts,57 coupled with extensive piloting and evaluation to ensure that policies take full account of the Thai context.73,74
In this study, we sought to examine why some countries are more successful than others in achieving better health or expanding access to essential services. The starting point was that health systems are complex and entail the interplay of “multiple interacting causes generating a set of often unpredictable effects”. For every country, we aimed to identify interventions that could be linked to specific health gains, which were mainly in the area of maternal and child health, a choice that reflected availability of data. We then sought to understand how and why specific developments took place, covering factors within health systems and their broader context, with the aim to identify plausible pathways to health improvement based on an integrated analysis across levels of the health system in different settings.

We used historical methods to trace the development of policies and programmes over long periods. We incorporated theories of path dependency of institutional development and of health systems resilience.

The countries we studied were selected from a list provided by the Rockefeller Foundation, which was based on preliminary analysis of good maternal and infant mortality outcomes relative to comparator countries with similar levels of total health spending. Further considerations were given to experience of innovative system-level reforms despite financial constraints. Moreover, geographic, economic, and health system diversity were considered.

The study design and data analysis protocol were explicitly comparative. Rigour was achieved with a common conceptual framework adapted to local settings to support comparisons (figure) and the methodological approach, and regular interaction took place among country research teams. The framework drew on existing health systems frameworks and encompassed both private and public sectors, recognising their relevant roles in different settings. The framework also allowed for non-health system factors that affect health (eg, policies to improve literacy, female empowerment). Health system and non-health system sectors were investigated within wider national and global contexts (eg, governance, economic and political factors, culture) that affect both the operation of national health systems and health achievements.

Case studies were undertaken from 2009 to 2011 and included a mix of quantitative and qualitative methods.

- Secondary analyses or synthesis of statistical data relevant to health system performance.
- A scoping review of published work with an iterative search process based on the conceptual framework, using PubMed, Medline, BIDS, HINARI, EconLit, and Google Scholar and supplemented by media accounts.
- Documentary review of relevant published and grey literature at country level, obtained through contacts with key informants and searches of local resources.
- In-depth interviews with current and former employees, who were key informants identified as especially knowledgeable on important policies and programmes, and people working across countries in the region, who were included to promote a comparative focus.
- Focus groups (in some countries).

We asked several questions in every country:

1. Why is the country an example of good health at low cost?
2. What key areas of health improvement have secured good health at low cost over the last few decades?
3. How has the country achieved these specific health gains (what diseases or conditions have been tackled)?
4. How did the health system and other sectors support the effective delivery of these interventions?
5. How and why were these health system developments and wider policy interventions possible?
6. What other sociocultural and political factors may explain health gains?

The framework analysis mirrored the conceptual framework and allowed for particular factors to emerge as dominant within every country. The process was iterative: as new themes and propositions emerged in one country, they were sought in the experiences of the other countries, and reasons for divergence were investigated. This information was then incorporated into data collection. At country level, findings were validated by triangulation of several data sources, peer review, public debate with current and past health system actors, and review of findings against relevant published work. We also obtained reviews by international experts on particular issues or countries. We prepared working papers, discussed them at team meetings, and undertook a peer-review procedure.
Panel 7: Contribution of non-health system factors to good health

Distinguishing between health system and non-health system factors is not straightforward. For example, politics and economics are both integral to WHO’s health systems framework: politics in the guise of leadership and governance, economics in terms of health financing. Furthermore, to distinguish between the two sets of factors could be detrimental to successful health policy, because a so-called silo mentality—ie, a reluctance by different development sectors to explore cross-sector or synergistic collaboration—could be encouraged among development agencies. To illustrate the health effects of non-health system factors, we discuss three factors that contributed to the good health outcomes reported in our country studies.

Infrastructure
Some evidence suggests that investment in national infrastructure has yielded health dividends. For example, rural electrification in Thailand has been linked to falling fertility. In Bangladesh, improvements to road infrastructure have augmented access to emergency obstetric care and birth outcomes, despite persistent high levels of home-based and unattended deliveries. The improved transport infrastructure and targeted subsidies (through a voucher scheme to reimburse transport costs) are believed to have contributed to better access to rural clinics. Rapid expansion of communications technology enabled more people to access information on health—eg, in the multimedia Bangladeshi Behaviour Change Communication campaign.

Empowerment
Female empowerment and gender equity are recognised widely as key determinants of development. Thus, we looked at gender issues in our five countries or regions. None had consistently high results on the standard indicators of gender equality. For example, in 2008, Thailand ranked 69th on the United Nations Development Program’s gender inequality index (Kyrgyzstan was 63rd and Bangladesh 116th).

Women in the five countries or regions enjoy fairly high political profiles. Kyrgyzstan elected the first female president in central Asia and has made a considerable achievement in boosting the political representation of women in parliament, by comparison with its neighbours. Bangladesh has had a female prime minister and leader of the opposition for the past two decades and both the home and foreign ministers in the 2011 cabinets are women. Thailand appointed a female prime minister in 2011. Since 1991, a woman has been one of the two alternating chief ministers in Tamil Nadu. In Ethiopia, many women have held ministerial and other high government roles, in social affairs, finance, and labour. However, whether these appointments have really led to important shifts in attitudes towards, or improvements in, opportunities for women in Ethiopia is debatable. Our case study findings suggest that progress towards empowerment of women and gender equality in Tamil Nadu, Ethiopia, Bangladesh, and Thailand owes more to civil society-led and community-based initiatives than to government activities.

In other sectors, however, we found non-health system policies to be significant contributors to the health outcomes reported. For example, in Bangladesh, improvements to road infrastructure have augmented access to emergency obstetric care and birth outcomes, despite persistent high levels of home-based and unattended deliveries. The improved transport infrastructure and targeted subsidies (through a voucher scheme to reimburse transport costs) are believed to have contributed to better access to rural clinics. Rapid expansion of communications technology enabled more people to access information on health—eg, in the multimedia Bangladeshi Behaviour Change Communication campaign. 

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area through its support for the international health partnership.

The media has sometimes served as a catalyst for change, disseminating public health messages, increasing awareness of entitlement to care, and tackling deeply rooted beliefs about health. In Tamil Nadu, media campaigns promoted AIDS awareness and family planning. In Thailand and Bangladesh, the media offered a means to hold authorities to account and raise local issues on the national agenda.

**Innovation**

All study countries showed innovation in various aspects of their health systems. Particular originality was seen in the workforce (which is a severe constraint in all countries), financing mechanisms, and means of delivering services.

**Innovative health workforce strategies**

In the 1985 report *Good health at low cost*, a link was made between investment in well trained health workers, particularly in primary health care (eg, Chinese barefoot doctors), and better health. The new countries studied in the follow-up report implemented a combination of established and innovative strategies to overcome staff and skill shortages at all levels.

Task shifting and changes in skill mix were common themes. In Thailand, expansion of human resources was judged a crucial step towards extension of coverage. In Kyrgyzstan, a new family medicine training centre led large-scale retraining of family doctors. Bangladesh made a major investment in emergency obstetric care in the public sector, with new facilities and staff trained and deployed to rural areas. The Ethiopian health extension programme (panel 2) is perhaps the most ambitious effort in sub-Saharan Africa to scale up the supply of primary workers and reduce the imbalance of health workers between rural and urban areas. These community-based staff brought essential primary care to almost two-thirds of the population by 2007, contributing to higher immunisation rates, improved malaria prevention, and accessible maternal and child health care in remote areas. In Tamil Nadu, the multipurpose workers scheme (village nurses), launched in the early 1980s, was scaled up rapidly. It now delivers integrated primary care in rural areas, with strengthened infrastructure and increased drug supply.

Changes made in our study countries included skills enhancement and task shifting. For example, in Kyrgyzstan, general practitioners are replacing doctors trained under the Soviet system, and in Ethiopia, health extension workers are delivering primary care that would once have been undertaken by nurses or doctors. Thailand introduced village health volunteers while enhancing the skills of public health nurses. Bangladesh took advantage of the many staff who had played a part in smallpox eradication and used them to form the core of a new cadre of health and family welfare assistants. Many of the existing community workers became village doctors (palli chikitsok) or unlicensed providers, particularly in rural areas. These people have been credited for some of the reduction in childhood mortality because they have enhanced access to basic medical advice and low-cost drugs. In Tamil Nadu and Bangladesh, community health workers increased the scope of their activities, including primary care and referrals during home visits, which augmented the level of integration between vertical programmes, particularly in maternal and child health.

**Health system financing and financial protection**

While all five study countries have shown a rise in real total expenditure per person on health since 1995, the rate of increase has varied. The most pronounced growth in spending was in Thailand whereas Ethiopia showed the smallest increase, which seems surprising in view of the external support the country has accrued in
recent times, suggesting substantial displacement of government spending.\textsuperscript{118} The increases have paralleled general economic growth; total health expenditure as a percentage of the gross domestic product (GDP) has remained largely stable over the years.\textsuperscript{7} Of the study countries only Kyrgyzstan has had any notable fluctuation, with a sharp drop in total health expenditure as a percentage of GDP in the late 1990s, followed by nearly a decade of recovery to previous levels.

As well as understanding total expenditure patterns, we also must know where funding comes from and goes to. In Thailand, the share of government health spending in total health expenditure has been rising over several years and more sharply since the implementation of universal coverage in 2001. With the emphasis on publicly funded health care, out-of-pocket payments in both Thailand and Ethiopia are relatively low, only 14% of total health expenditure in Thailand (2010)\textsuperscript{119} and 42% in Ethiopia (2009),\textsuperscript{7} which is low compared with India and Bangladesh, both of which have extensive private sectors. In Bangladesh, for example, there are three major suppliers of health care in the non-state sector: NGOs; formal and informal private sector providers; and suppliers of traditional medicines. The share of government and out-of-pocket payments has fluctuated in Kyrgyzstan (with recent declines in out-of-pocket payments),\textsuperscript{120} reflecting the move to mandatory social insurance and the long-established formal and informal top-up paid by users.

All study countries recognised that the financial burden of seeking health care affects vulnerable households disproportionately, through unexpected and sometimes catastrophic out-of-pocket payments.\textsuperscript{121,122} Ethiopia is developing a system of social health insurance for employees in the formal sector and community health insurance for others. Both Thailand and Kyrgyzstan have achieved almost universal coverage, but in Kyrgyzstan, some groups remain without coverage and out-of-pocket (and informal) payments persist.

The depth of coverage (benefits package) is important as well as its breadth. Kyrgyzstan has gradually expanded the basic benefits package with continued government support. In Thailand, renal replacement therapy was included explicitly to avert risk of catastrophic expenditure. Early adoption of antiretroviral treatment was possible because the Thai Government pharmaceutical organisation produced low-cost, generic combination therapy. In Kyrgyzstan, the state guarantee benefit package has been revised annually to reflect available funds. However, this review has not happened in Bangladesh where, despite a rapid increase in non-communicable disease, the package remains unchanged.

Another way to increase the resources available for health is to improve efficiency. Kyrgyzstan implemented a single-payer system for providers, linking resource allocation to performance. It was the only country in the former Soviet republic that radically downsized its inherited hospital infrastructure, redirecting funding to patients’ care.\textsuperscript{123}

**Service delivery**

We identified many innovations in service delivery in our five study countries or regions. For example, in Bangladesh, low-cost innovations were introduced to treat common illnesses, such as oral rehydration solution and zinc to treat diarrhoea, and these strategies were delivered by community workers. In Tamil Nadu, public–private partnerships were used to expand capacity. The Ethiopian health extension programme is another novel idea for service delivery. All countries reorientated services towards primary care, although with easier referral to higher tiers, thus reinforcing the message in the 1985 report *Good health at low cost* and subsequent evidence about the important role of affordable community-based health care.\textsuperscript{124} Since the 1970s, a gradual move has taken place from vertical models of care (eg, family planning in Bangladesh) towards integrated models prioritising maternal and child health services, although this transition has been more difficult in places with diverse providers (eg, Bangladesh and Tamil Nadu).

Another key area of innovation that has supported effective service delivery is increased access to affordable medicines. Both Bangladesh and Tamil Nadu adopted predominantly public-sector solutions and contracted-out only some tasks, to promote affordability. In Ethiopia, greater access to drugs boosted the ability of health extension workers to deliver effective care. Implementation of flexible service provision models that reflect the context, rather than transplanting models from elsewhere, has been instrumental in improving access and achieving substantial health gains.

**Building resilience in the health system**

Health systems are sometimes vulnerable to unexpected shocks, leading to growing interest in how to foster resilience.\textsuperscript{73,124} Thailand and Ethiopia have recently been affected by large-scale natural disasters and have subsequently put in place systems to prepare for similar events in the future. Long experience with seasonal floods and cyclones has made Bangladesh a model of development for appropriate infrastructure and systems to coordinate emergency responses, such that recent natural disasters (eg, cyclone Sidr in 2007) have not led to the mass casualties seen in previous eras. Thailand has implemented early-warning systems for tsunami and implemented the 2010 Association of SouthEast Asian Nations (ASEAN) cooperation in flood prevention and rehabilitation. Ethiopia has enhanced its ability to respond to droughts, although capacity remains limited, as shown by the effects of the 2011 famine in east Africa. Health systems have been central to these preparations, creating spillover effects in terms of improved planning, strengthening of institutions, and streamlining of processes.
Cross-cutting lessons
Here, we have attempted to distil cross-cutting lessons from our analytical case studies of Tamil Nadu in India, Bangladesh, Kyrgyzstan, Thailand, and Ethiopia. Cross-country analysis of national or regional experience has value for identification of common themes, even if the detailed characteristics vary. Although we do not present a roadmap for success, our synthesis draws attention to health system and non-health system factors that seem to be important across our study countries for achievement of good health outcomes. Health system strengthening is much more than mechanistic implementation of a series of essential interventions, and formal policy fulfilment can be hampered by unintended outcomes.75

We should be cautious when we interpret our conclusions because our study had several limitations. We could only analyse five countries in detail, although within the study we did undertake a broader review of published work on health system performance to inform our methods. We focused on a specific set of countries judged to have had a fair amount of success in achieving health gains and improving coverage. To undertake in-depth research in countries with similar characteristics, but that had not made comparable progress, was beyond the scope of our study. Major data gaps were seen in all countries (less so in Thailand), particularly for reliable longitudinal data at subnational level, and the scarcity of counterfactuals that could be used to investigate associations between health policies, coverage of interventions, and outcomes meant that we were only able to identify plausible associations rather than imply a causal attribution. Recognising these challenges, we aimed to strengthen rigour with analytical and methodological approaches, including a historical perspective (panel 6). We sought comparability through setting the experience of study countries in the context of their regions, where possible, and analysing similar experiences in different settings.125

The phrase “good health at low cost” conveys the message that health improvements can be achieved in countries at relatively low income levels. The national and regional experiences show how progress in health and access to care has been possible even with limited resources. Coverage of essential interventions delivered in primary care settings has improved, with support from health-promoting policies in other sectors and without a substantial increase in the share of national resources spent on health. Although we acknowledge that sustained financial investment in health systems is essential for further progress, the experiences we describe show what committed politicians, effective managers, motivated health workers, effective institutions, and involved communities can do in constrained circumstances.

We have highlighted the importance of individuals in creating ideas and generating political momentum. But community matters too, as the relation between education and fertility transition in Tamil Nadu shows. In all countries and regions, good governance and leadership were important for determining whether the health systems operated effectively. Our study reiterates many of the messages that emerged from the original Good health at low cost report,1 and other well established evidence, about the need to orientate health systems towards primary care, backed up by effective referral systems, the importance of strategic action, supported by multiple stakeholders. The relevance of inclusive and community-orientated primary health care is restated elsewhere.123,126 and the report of the Commission on Social Determinants of Health emphasises the need for intersectoral action to promote health.127,128 Specific aspects of governance encompass leadership and vision by government and translation of this vision into action, including the ability to maintain continuity despite turmoil, to seize windows of opportunity, to be responsive to population needs, and to be committed to accountability. Stable institutions and bureaucracies that have adequate regulatory and managerial capacity and institutional memory provide means to learn from experience. A degree of autonomy and flexibility in the way a government operates—enabling adaption to changing circumstances—and engagement with diverse actors and sectors were important in these increasingly pluralistic environments. Faced with growing demands for health workers, inadequate supply and difficulties with migration and retention, and shortages in remote rural areas, every country and region has developed innovative strategies to increase the size and skills of the health workforce and improve retention in underserved and rural areas.

Panel 9: Action points
Countries of low and middle income can make substantial improvements to delivery of health care, despite limited resources, and can increase coverage and augment health in the long term. Investment and political initiatives, both globally and nationally, should address four aims to boost the chances of success. Actions to strengthen systems can include:
• Building capacity with skilled individuals who have the ability to inspire and are supported by strong institutions
• Promotion of continuity by providing the stability necessary for reforms to be seen through to completion, coupled with the institutional memory that helps to learn lessons amid changing priorities
• Identification of catalysts for change and to seize windows of opportunity to promote key reforms and build broad political support
• Ensuring that policies are responsive to needs and social values and are adapted to the circumstances of the country in question, and to make sure that learning can be achieved across countries facing similar situations

Health systems research should take a longer term approach in view of the social, economic, and political context in which social institutions (in the health sector or beyond) are embedded, which would also help to account for their success or failure. Comparative research can inform policies seeking to achieve universal coverage and create opportunities for learning across countries sharing similar geographic and socioeconomic characteristics.
We have shown that progress was possible in the five study countries under different health financing arrangements. In all places, expansion of financial risk protection was acknowledged to be necessary; Thailand and Kyrgyzstan have achieved universal coverage whereas Bangladesh and Tamil Nadu are only just beginning, with Ethiopia making some progress from a low baseline in a short time. Advances in maternal and child health outcomes and access to services were achieved despite high levels of out-of-pocket payments in several countries. A new finding was the importance of building resilience into the health system, making a response to political turmoil, economic crises, and natural disasters easier.

What we have added with our study is new evidence on the factors that enabled these five countries and regions to pursue pathways to good health despite political and economic constraints. We have identified broad principles translated into practical policies that facilitate progress in improving health and delivering health care, which are likely to be applicable elsewhere. Our key conclusion is that four interlinked elements were common to all study countries (panel 9): capacity, comprising skilled and frequently inspirational individuals, supported by strong institutions; continuity, providing the stability necessary for reforms to be seen through to completion coupled with the institutional memory that helps to learn lessons amid changing priorities; catalysts for change, or seizing of windows of opportunity; and sensitivity to context, meaning adaption of policies to the circumstances of the country in question rather than simply being transplanted from somewhere else. Although these fundamentals might not guarantee sustained progress, if they are all present health gains are more likely.

Strategic investment in health systems remains key to accelerate and sustain the achievements in health and access to essential services reported here. Continued health system development will allow countries to move beyond picking the low-hanging fruit that make up the common causes of childhood death, onto tackling chronic diseases that are accelerated by growing urbanisation and changing lifestyles. This reorientation could well require increases in funds and other resource inputs that health systems need, if high-quality services are to be available to all population groups at an affordable cost and if health systems are to respond to growing population expectations.

Contributors
DB, MM, and AW wrote the first draft of the paper. All authors then made equal contributions to writing and further clarifications. DB, MM, AM, and LC made extensive revisions and produced the final version. All authors contributed ideas to the study, its design, and data analysis leading to this report.

Conflicts of interest
We declare that we have no conflicts of interest.

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