

## Maternal Health 6



# Quality maternity care for every woman, everywhere: a call to action

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To improve maternal health requires action to ensure quality maternal health care for all women and girls, and to guarantee access to care for those outside the system. In this paper, we highlight some of the most pressing issues in maternal health and ask: what steps can be taken in the next 5 years to catalyse action toward achieving the Sustainable Development Goal target of less than 70 maternal deaths per 100 000 livebirths by 2030, with no single country exceeding 140? What steps can be taken to ensure that high-quality maternal health care is prioritised for every woman and girl everywhere? We call on all stakeholders to work together in securing a healthy, prosperous future for all women. National and local governments must be supported by development partners, civil society, and the private sector in leading efforts to improve maternal–perinatal health. This effort means dedicating needed policies and resources, and sustaining implementation to address the many factors influencing maternal health-care provision and use. Five priority actions emerge for all partners: prioritise quality maternal health services that respond to the local specificities of need, and meet emerging challenges; promote equity through universal coverage of quality maternal health services, including for the most vulnerable women; increase the resilience and strength of health systems by optimising the health workforce, and improve facility capability; guarantee sustainable finances for maternal–perinatal health; and accelerate progress through evidence, advocacy, and accountability.

### Introduction

Globally, the maternal mortality ratio nearly halved between 1990 and 2015. However, progress was patchy, with only nine countries with an initial maternal mortality ratio greater than 100 achieving the Millennium Development Goal (MDG) 5 target of 75% reduction.<sup>1</sup> 26 countries made no progress, and in 12 countries—including the USA—maternal mortality ratios increased.<sup>1</sup> A woman's lifetime risk of dying as a result of pregnancy and childbirth remains more than 100 times higher in sub-Saharan Africa than in high-income countries.<sup>1</sup> Deaths of newborn babies have also declined at a slower rate than those of older infants and children, and stillbirths remain high.<sup>2–4</sup>

Yet maternity service use has increased substantially in the past 10 years since the 2006 *Lancet* maternal health Series: three-quarters of women now deliver with a skilled birth attendant and two-thirds receive at least four antenatal care visits worldwide.<sup>5,6</sup> This mismatch between burden and coverage exposes a crucial gap in quality of care. Millions of women receive services that are delayed, inadequate, unnecessary, or harmful,<sup>7–9</sup> minimising the opportunity for health gains for both mothers and babies.

In parallel to the women accessing services but receiving poor-quality care, millions of women and adolescents who undertake their journey through pregnancy and childbirth outside the health system are left behind from the progress in coverage. They represent a vulnerable population facing multiple challenges that arise from their individual circumstances. Statistics show a growing divergence within and between countries in coverage of maternity services for

women, mirrored by a doubling of the gap in levels of maternal mortality between the best and worst performing countries in the past 20 years.<sup>10</sup>

The dual streams of poor-quality or inaccessible care coexist everywhere—a universality that spans countries of low, middle and high income, including fragile and conflict-affected nations; and those considered economically and politically stable. Every woman, everywhere, has a right to access quality maternity services, and the benefits of such access extend to the fetus, newborn babies, children, and adolescents. Effectively addressing maternal health requires integrated programming that takes into account these inextricable linkages, and requires connections with the broader social and political context in which women live (appendix). The breadth and complexity of such linkages are reflected across the *Lancet* Series and other publications on stillbirths, newborn babies, midwifery, and adolescent health.

In this paper, we highlight the most pressing issues in maternal health and ask two questions: what actions can be taken in the next 5 years to achieve the Sustainable Development Goal (SDG) target of a global maternal mortality ratio less than 70 maternal deaths per 100 000 livebirths by 2030, with no single country having a maternal mortality ratio greater than 140 maternal deaths per 100 000 livebirths? What steps can be taken to ensure that high-quality maternal health care is prioritised for every woman (including adolescents) and baby everywhere, supporting the vision of the Global Strategy for Women's, Children's, and Adolescent Health?

We consulted experts, reviewed the literature, and carefully analysed the five papers of this Series; our overall

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## Key messages

- The MDG5 target to reduce maternal mortality by 75% was not achieved. The gap between countries with highest and lowest mortality has increased despite increased use of maternity care.
- This mismatch exposes an important gap in quality of care—delayed, inadequate, unnecessary, or even harmful services—minimising the opportunity for health gains for mothers and babies.
- In parallel, millions of pregnant women and adolescents are left behind from the progress in coverage.
- Poor-quality and inaccessible care coexist everywhere—in countries of low, middle, and high income; in fragile nations; and in those considered economically and politically stable.
- Five priorities require immediate attention to catalyse action and support the vision of global initiatives to achieve the SDG3 global target of a maternal mortality ratio of less than 70: (1) prioritise quality maternal health services that respond to local specificities of need and meet emerging challenges; (2) promote equity through universal coverage of quality maternal health services, including for the most vulnerable women; (3) increase resilience and strength of health systems by optimising the health workforce and improving facility capability; (4) guarantee sustainable financing for maternal–perinatal health; and (5) accelerate progress through evidence, advocacy, and accountability.
- Crucial to achieving equity will be the growing pressure on national and regional governments in even the poorest countries to provide universal health coverage.
- As conditions evolve, and women's preferences change and diversify, these priorities will require strong partnerships between the maternal health community and those addressing reproductive, newborn, child, and adolescent health care more broadly; those focused on the increasing burden of non-communicable diseases, malnutrition, infectious diseases, and mental ill-health; and those focused on other SDG targets, from ending poverty to building resilient infrastructure.
- To achieve and accelerate these actions will result in benefits for women, newborn babies, and stillbirths, that will extend to children, families, and the community, in this generation and the next.

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See Online for appendix

themes are to improve maternal health, ensure the quality of maternal health care for all women and adolescents, and guarantee access to care for those left behind who are most vulnerable. These themes underlie the priority areas for action summarised in panel 1.

### Priority 1: Prioritise quality maternal health services

#### Context-appropriate implementation strategies

Prevention of unwanted or poorly timed pregnancy is the first step. By ensuring access to modern contraceptives for all women and adolescents, everywhere, this step could reduce maternal deaths by an estimated 29%.<sup>11</sup> In 2015, 12% of women had unmet need for contraceptives,<sup>12</sup> and approximately 7·9% of maternal deaths were attributed to unsafe abortion.<sup>13</sup> Thus, safe abortion services are also important.

For pregnant women continuing to term, Souza's obstetric transition<sup>14</sup> extends the concept of demographic and epidemiological transitions to maternal health, and helps stage appropriate intervention priorities. Panel 2 presents settings in five stages from high fertility and maternal mortality to low fertility and mortality. Across settings corresponding to stages I–III (maternal mortality

ratio >70), gaps in access to maternity services remain; and direct causes of maternal death predominate although indirect causes, particularly infections, can be present. In stages IV and V with maternal mortality ratios less than 70, nearly all women access services, and indirect causes of death are substantial. In all stages, effective quality coverage is the goal: the right care, tailored to the local burden of illness, received by the right women at the right time, in a respectful manner.<sup>8,10</sup>

Where women reach maternity care services, timeliness, quality, and excessive intervention need to be addressed.<sup>7,9</sup> High effective coverage of known interventions particularly for vulnerable populations (figure 1)—eg, use of appropriate uterotonic drugs for prevention of post-partum haemorrhage,<sup>17</sup> antibiotics for sepsis, and preventive interventions for anaemia<sup>18</sup>—could greatly decrease maternal deaths<sup>19–21</sup> and improve perinatal outcomes.<sup>22</sup> In later stages of the obstetric transition, routine labour augmentation<sup>23</sup> and excessive caesarean delivery<sup>24–27</sup> emerge as negative unintended consequences of increased access to facility delivery.<sup>7,9</sup> An effective national strategy should also attend to iatrogenic outcomes arising from poor-quality care and excessive intervention.<sup>7,9</sup>

There are sound recommendations on the content of care and guidelines for implementation throughout the continuum of pregnancy to post-partum care.<sup>7–9,28,29</sup> Adherence to high-quality clinical practice guidelines, when combined with simulation-based training, can improve providers' knowledge, clinical skills, attitudes,<sup>30</sup> and women-centred approaches.<sup>31,32</sup>

Although global recommendations for the content of care are valuable, to make standardised global prescriptions for implementation strategies is inappropriate.<sup>8</sup> Both health systems and maternity-care models vary within and between countries, so there is no simple universal solution. Providing maternity care in a given setting is, in part, a function of available resources and existing infrastructure—including the private sector, human resources, financing, and factors such as geography, population density, facility density and capability, and distance between peripheral and referral centres.<sup>8</sup> Even so, countries with the best outcomes, lowest clinical intervention rates, and lowest costs have integrated midwifery-led care through different models that include team-based care in maternity wards, alongside midwifery-led units (low-risk units alongside full scope maternity hospitals), free-standing midwifery-led units, and home-based midwifery.<sup>9</sup>

Despite the diversity in models of providing care, the starting point is the same for all countries: to ensure that every woman, everywhere, delivers in a safe environment. Each country needs a clear national statement of what care needs to be provided to pregnant women, what constitutes routine care for uncomplicated deliveries, and what mechanisms are required to respond on a timely basis to complicated deliveries, including referral linkages. Countries then need to carefully compare this national statement with their present situation using tools such as

facility and population-based surveys, or routine information systems. The appendix summarises these priority actions to improve facility capabilities.

### Build linkages within and between maternal-perinatal and other health-care services

Effective clinical interventions for direct causes of maternal death are well-known (figure 1), but to achieve better outcomes globally also requires that the increasing burden of indirect causes of maternal morbidity and mortality is addressed.<sup>10</sup> This priority action involves clarity on interventions, and integration with other facets of the health system, from prevention, to primary care, to tertiary-facility networks.

In sub-Saharan Africa, infectious diseases, such as malaria and HIV, take their toll on maternal health and contribute to the burden of perinatal deaths.<sup>20,33–35</sup> In settings with fewer of these infectious diseases or fewer deaths due to traditional direct causes, non-communicable diseases and mental health become more prominent, often in relation to older motherhood and obesity.<sup>9,10,36</sup>

In such contexts, if prevention is unsuccessful, effectiveness of maternity services will increasingly require integration across health-care services and linkages between levels of care. This approach will vary by context. In low-income, high-burden settings, some of these services are unavailable, and funding and programming silos fragment others: HIV/AIDS, tuberculosis, and malaria resources should be required to effectively link with maternity services.<sup>37</sup>

A substantial patient-safety literature identifies movement between services as an important point when care breaks down. For example, antiretroviral therapy protocols for HIV-positive women identified via antenatal care screening were adapted to require fewer visits to ensure high coverage of prevention of mother-to-child transmission in the narrow time-window before delivery.<sup>38</sup> Reduction of maternal and perinatal deaths attributable to eclampsia or pre-eclampsia requires functional linkages between antenatal care and hospital-based services.<sup>39</sup> The call-to-action for the *Lancet* stillbirth Series, echoes the importance of coherent integrated action across services to improve maternal, newborn, and stillbirth outcomes.<sup>4</sup> Innovative interventions (eg, new screening tests, high-tech medicine, and telemedicine) can provide solutions but also pose challenges for maintaining equity, particularly when costly.

Local empirical studies are needed to collect basic descriptive data on approaches for integrating maternal health care and services for non-communicable diseases, infectious diseases, malnutrition, and mental health. Implications for staff workload, skill mix, and service quality of midwives, but also of laboratory technicians, anaesthetists, community health workers, and supply chain managers, among others, need to be assessed to clarify the implications for woman-centred care. Pre-service training curricula need to be strengthened to ensure health

### Panel 1: Priorities and priority actions for accelerated progress toward improved maternal health

- Priority 1: Prioritise quality maternal health services that respond to the local specificities of need, and meet emerging challenges
- Priority action 1.1: Ensure timely, equitable, respectful, evidence-based, and safe maternal-perinatal health care, delivered through context-appropriate implementation strategies
- Priority action 1.2: Build linkages within and between maternal-perinatal and other health-care services to address the increasing diversity of the burden of poor maternal health
- Priority 2: Promote equity through universal coverage of quality maternal health services, including for the most vulnerable women
- Priority 3: Increase the resilience and strength of health systems by optimising the health workforce and improving facility capability
- Priority 4: Guarantee sustainable financing for maternal-perinatal health
- Priority 5: Accelerate progress through evidence, advocacy, and accountability
- Priority action 5.1: Develop improved metrics, and support implementation research to promote accountable, evidence-based maternal health care
- Priority action 5.2: Translate evidence into action through effective advocacy and accountability for maternal health

### Panel 2: Stages in the obstetric transition and corresponding priority actions

#### Stages I and II (maternal mortality ratio >420)

Prioritise the following:

- Develop and support front-line infrastructure and human resources
- Provide access to simple preventive interventions, including family planning, bednets, iron supplementation, and safe abortion
- Provide routine maternal health-care components (eg, antenatal care and uterotonics post-delivery) and emergency response for urgent problems (eg, haemorrhage and newborn resuscitation) to reduce major direct causes of mortality
- Improve service quality with provider training, including respectful treatment of women, ready access to basic equipment and supplies, supportive supervision, and other key supports
- Focus on equitable demand creation (UHC)

#### Stage III (maternal mortality ratio 70–420)

Assume actions for stages I and II are met, and prioritise the following:

- Improve management of routine delivery and of complications, including a timely referral process
- Improve service quality through appropriate integration, especially for infections, malnutrition, and mental health, as well as triage and referral
- Employ quality of care improvement methods (including clinical practice guidelines), timely data collection, and use for decision making and programme improvements
- Increase demand for services, with specific focus on the vulnerable, through respectful satisfactory care provision based on women's needs and perspectives, address transport or location needs, and effective use of financial initiatives (UHC)

#### Stages IV and V (maternal mortality ratio <70)

Assume actions for stages I to III are met, and prioritise the following:

- Improve integration or linkages with health care for infections, malnutrition, NCDs, and mental health
- Address between and within facility delays
- Improve quality of care and decrease excessive medicalisation
- Increase satisfaction with care and sense of wellbeing

UHC=universal health coverage. NCDs=non-communicable diseases.

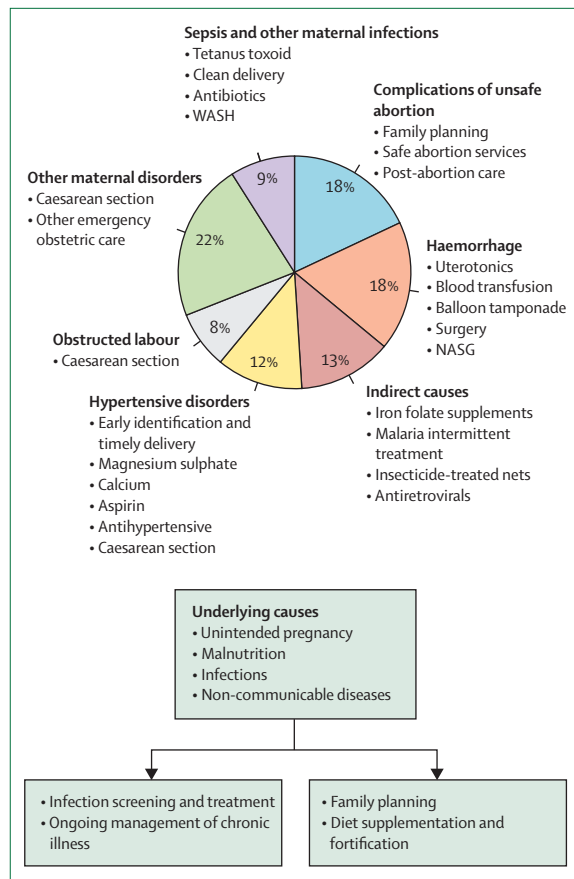


Figure 1: Main causes of maternal death and key interventions (2013)<sup>10,15,16</sup>  
WASH=water, sanitation, and hygiene. NASG=non-pneumatic anti-shock garment.

workers' skills in managing women with comorbidities, and that clinical practice guidelines are available and followed.<sup>2</sup> Essential drug lists will need to be expanded to include those for indirect morbidities.

## Priority 2: Promote equity through universal coverage

Women everywhere fail to seek care for numerous reasons, including sociocultural factors such as gender inequality, location because of remoteness or conflict, and financial constraints.<sup>40–46</sup> These three major access barriers require immediate attention.

Gender inequality reflects power imbalances between men and women both within the household and in the wider societal context,<sup>47</sup> and is both defined and perpetuated by sociocultural norms. Documented to varying degrees in every country worldwide,<sup>48</sup> gender disparities affect women and maternal health through pathways directly<sup>49</sup> (eg, early marriage and childbearing, decision making about care seeking, costs of care, and types of care sought) and indirectly<sup>50,51</sup> (eg, education and availability of food). Gender-based violence, one of the most extreme forms of discrimination against women, increases during pregnancy and directly affects maternal and perinatal

health.<sup>50</sup> Gender inequality can also affect health-care providers, many of whom are women.<sup>52</sup>

Solutions to gender inequality include access to basic information about maternal, perinatal, and reproductive health; and care seeking targeted at women, families, communities, and providers; as well as a commitment to humanised services.<sup>53</sup> The roles of men and influential family members, such as mothers-in-law, are key and need to be addressed to enable women to make informed care choices. On a small scale, appropriate messages shared through mass media, interpersonal counselling, and women's groups have improved use of facilities for birth, referral for complications, and reduced maternal morbidities, stillbirths, and perinatal mortality.<sup>15,54–57</sup> Messages are more effective when they involve problem solving<sup>58,59</sup> and participatory community engagement.<sup>58,60,61</sup> Some programmes focused on education, employment, and autonomy for women and girls have also shown effectiveness in improving use of maternal health services.<sup>47</sup>

Women living in remote areas or in areas of humanitarian crises face other challenges.<sup>40</sup> Rural residence brings the obvious barrier of increased distance to hospitals. Solutions to improve access can include linking women to delivery services during antenatal care, providing maternity waiting homes to bring women closer to services before labour begins, and improving and subsidising transport, including for emergencies.<sup>3</sup>

Women in areas of humanitarian crises are among the super-vulnerable populations of fragile states. 16 countries<sup>49</sup> are in the high-alert category of the Fragile States Index, and in nine, more than a third of women reside in conflict areas. Many have high maternal mortality ratios: 60% were either seriously or moderately off target for MDG 5.<sup>62</sup> High fertility and unwanted pregnancies are typically common, particularly among adolescents, and are often caused by sexual violence inflicted as a weapon of war.<sup>63</sup>

Despite increased need, maternal and reproductive health resources for even basic services such as family planning, obstetric emergencies, and comprehensive abortion care are insufficient or non-existent during humanitarian crises, especially in countries with pre-existing weak health systems.<sup>64</sup> For example, in the Ebola virus epidemic, maternal and infant mortality, which were already high before the outbreak, increased substantially during the crisis.<sup>65</sup> Ensuring access and availability of these basic services is necessary everywhere, including in areas with humanitarian crises.

Financial constraints underlie much of the poor access to maternal health services in all settings.<sup>44–46</sup> Poor sub-populations in low-income and middle-income countries still face catastrophic expenditures due to emergency obstetric care. In parts of Mali, for example, more than 50% of households needing emergency obstetric care incurred catastrophic expenditures.<sup>66</sup> Establishment of large pre-payment and risk-pooling mechanisms, which reduce reliance on out-of-pocket spending, could curb catastrophic health

expenditures in the near-term and long-term. A systematic review found that health insurance was positively correlated with the use of maternal health services, although the effects on quality-of-care and health outcomes remained inconclusive.<sup>67</sup> Other financing instruments can also be deployed to promote access such as cash transfers, microcredit, vouchers, and user fee removal.<sup>68–70</sup> To support free health-care policies additional investment in pay and recruitment, commodities, and infrastructure might be needed, including staff pay increases for more demanding workloads.<sup>71–73</sup>

“Leaving no one behind” is a key slogan in the well-emphasised SDGs of greater equity, but will such promise reach these populations left behind with a disproportionate burden of poor maternal health? Universal health coverage is the core mechanism for achieving SDG 3, with linked objectives around quality and availability of care, matching uptake with need, and improving cost-effectiveness and financial protection.<sup>74</sup> Every universal health coverage initiative should include a strong maternal health service core and ensure that it reaches every woman, everywhere with quality care, and without causing financial hardship and pushing families into poverty. Progressive universalism is presented as the pathway to achieving universal health coverage, defined as a determination to include people who are poor from the beginning, as elaborated by Kruk and colleagues.<sup>75</sup>

### Priority 3: Increase the resilience and strength of health systems

In view of the existence of unserved populations, and changing and diverging maternal health needs, an increase of the strength and resilience of national health systems to respond at scale with quality care, and in a sustainable manner, is urgently needed. Resilience demands mechanisms to ensure essential health services are delivered, regardless of the stress on the system; and must include the capacity to address the special needs of women, adolescents, and newborn babies,<sup>68,76</sup> even as those needs change with outbreaks (such as Ebola virus disease or Zika virus infection) or with conflicts. This resilience is a challenge for countries with over-stretched staff and weak governance. At a minimum, the building of resilient and strong health systems requires an emphasis on increasing and optimising the health workforce and improving facility capability.

Human resources are a glaring challenge to health systems in all countries, especially low-income and middle-income countries. The numbers of skilled health professionals (ie, midwives and physicians, and others such as anaesthetists); and their composition, deployment, retention, and productivity are dynamic yet crucial variables in ensuring universal access to sexual, reproductive, maternal, and newborn health.<sup>77</sup>

Modelled estimates point to the need for more than 18 million additional health workers by 2030 to meet the SDGs and universal health coverage targets, with gaps

concentrated in the low-income and middle-income countries.<sup>78</sup> Even in countries with improving provider-to-population ratios, the geographical distribution of providers remains a challenge, with several countries reporting densities in the most underserved areas that are a small fraction of those in urban areas.<sup>79</sup>

Figure 2 compares the ratios of practising midwives, auxiliary midwives, nurse midwives, and obstetricians and gynaecologists to the number of pregnancies in African countries.<sup>80</sup> It shows that countries with the largest numbers of births (eg, Democratic Republic of the Congo, Tanzania, Kenya, and Ethiopia) have some of the lowest densities of midwives and obstetricians (<2 per 1000 pregnancies).

To address complex and multifaceted health workforce challenges that hinder the provision of maternal–perinatal care requires an integrated approach to better balance health workforce needs, demand, and supply, as well as to provide health workers with an enabling work environment. Some of the required interventions might be specific to the staff most directly involved in providing maternity care. For instance, the policy and regulatory environment for midwifery care should be realigned with midwives’ pre-service education and accreditation requirements. Despite having the potential to address most maternal and newborn health needs, in many countries, midwives are not authorised to perform within the full scope of their profession, and they lack the authorisation to deliver the signal functions of basic emergency obstetric and neonatal care. There is also evidence that, beyond skilled health workers, task shifting to other roles, such as community-based health workers, can play a substantial part—in certain contexts and during certain circumstances—in expanding access to select health services, particularly family planning and medication abortion services.<sup>81,82</sup>

Effectively addressing health workforce bottlenecks requires an integrated and comprehensive approach. Countries—and, where relevant, development partners—need to invest in training, deploying, and retaining health workers; by expanding the fiscal space and allocating resources more equitably and efficiently across levels of the health systems; by strengthening pre-service education to ensure a quantitative scale-up, a rural pipeline for health workforce production and deployment, and improvement in the quality of their competencies; by ensuring a gender-balanced approach to health workforce education, deployment, and management; by adopting a range of financial and non-financial incentives to improve management systems and the work environment in which they operate, so as to maximise worker motivation and performance,<sup>78</sup> and minimise risks of attrition and emigration.

The necessary expansion of the health workforce should lead to cost-effective resource allocation, prioritising a skills mix that harnesses inter-professional primary care teams of health workers, and avoiding the pitfalls and cost escalation of over-reliance on specialist and tertiary care. A WHO framework (appendix) illustrates the supply,

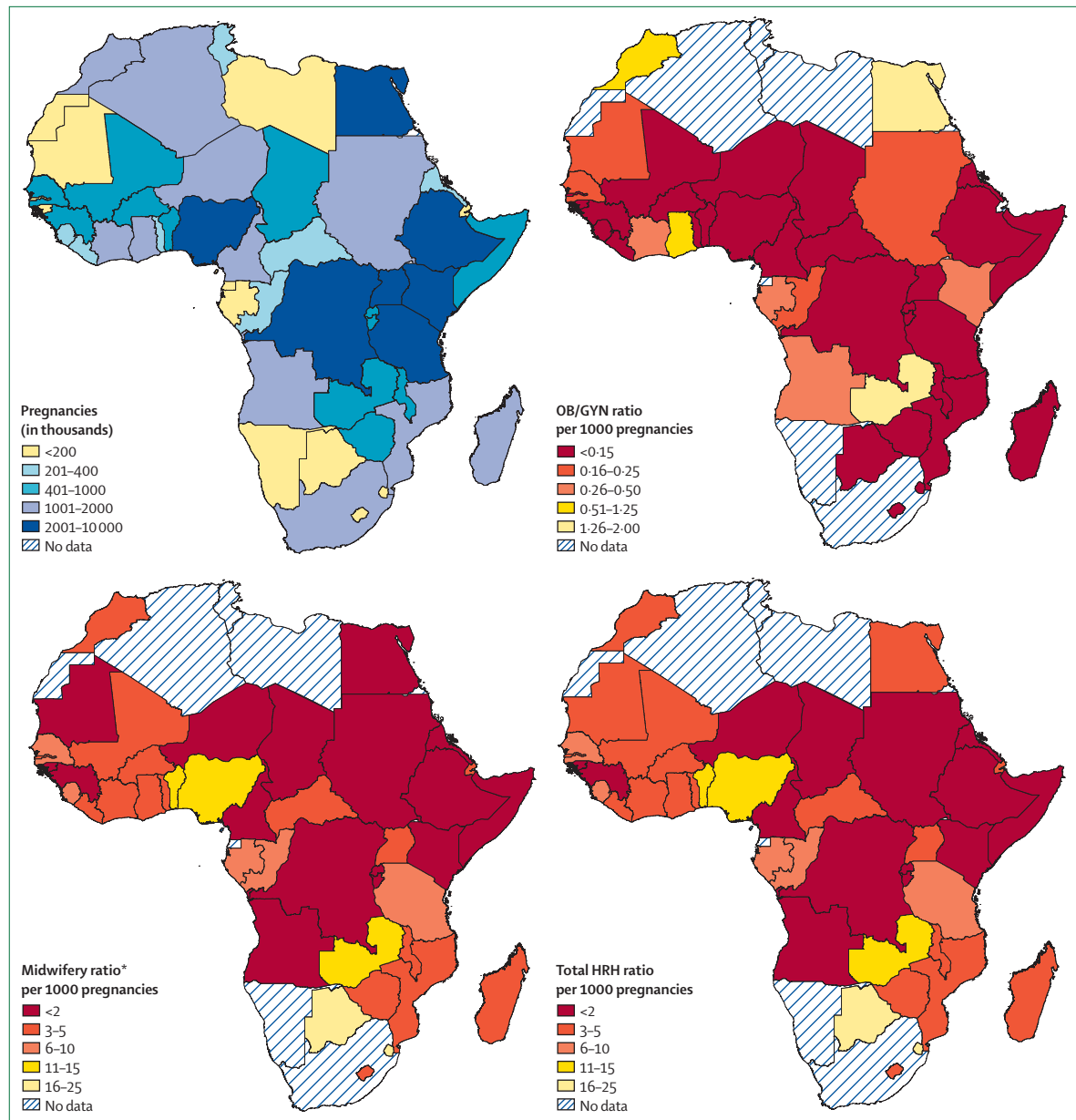


Figure 2: Human resource ratios per 1000 pregnancies in Africa 2012

OB/GYN=obstetricians and gynaecologists. HRH=human resources for health. \*Midwifery workforce including midwives, auxiliary midwives, and nurse midwives.

demand, and contextual factors for human resources, which has been adapted for the specific needs of maternity services in a UNFPA Handbook.<sup>83</sup>

An inadequate workforce is not the only challenge. Campbell and colleagues<sup>8</sup> elaborate on the extent to which countries have inadequate numbers of functional facilities. The starting point needs to be a clear national statement of what should constitute primary care for uncomplicated deliveries, and what mechanisms, including referral, need to be in place for complicated deliveries. As we have suggested, facility capability can be carefully compared with the present situation measured using facility surveys (ie, quantifying the aspiration gap); and reviews of bed

capacity, stock outs and supply chains, and maintenance and infrastructure. Planning means such as the One Health tool can also help to assess needs. Subsequently, budgeted plans with target dates need to be put in place to address the aspiration gap.

#### Priority 4: Guarantee sustainable financing for maternal-perinatal health

##### Capture expanded domestic fiscal space for maternal health

The investment case for health financing, particularly for investing in the health and education of women, has been clearly made by a *Lancet* Commission, WHO, and

others.<sup>84–86</sup> Additional investments in high maternal and child mortality countries would yield high rates of return, producing up to nine-times the economic and social benefit by 2035.<sup>86</sup> Yet a real resource gap remains.<sup>87</sup> During the 2013–35 timeframe, Stenberg and colleagues<sup>86</sup> project that an additional investment of US\$72.1 billion is needed to achieve high coverage of an essential package of maternal and newborn health services. These services can be expected to yield a triple benefit of reduced maternal deaths, stillbirths and newborn deaths, and gains for child health and development. How then can the global community translate potential long-term investment returns into concrete next steps that will improve maternal health during the next 5 years?

In this Series, Kruk and colleagues<sup>75</sup> highlighted that the economic transition in low-income and middle-income countries can increase the domestic fiscal space for health. However, 10 years after a *Lancet* Series paper on financing for maternal health,<sup>88</sup> concern remains as to whether the maternal health financing gaps can be filled with domestic resources. Nandakumar and colleagues<sup>89</sup> showed that between 1995 and 2011 as countries transitioned from low to lower-middle-income status and donor spending declined, governments did not step in to fill the gap. Indeed, the authors identified an increase in the share of out-of-pocket spending and other private sources of financing for health. Another analysis<sup>71</sup> found that while government spending on health in high-income countries rises commensurately with gross domestic product growth, each percentage point increase in economic growth in low-income countries is associated with only half a percentage point growth in government spending on health.<sup>71</sup> A recent analysis echoed these concerns, projecting that between 2013 and 2040, only 3% of low-income countries and 37% of middle-income countries are likely to reach the goal of 5% of gross domestic product spent by the government on health.<sup>90</sup>

For these reasons, greater coordination and investment in national advocacy is needed to support governments to build and sustain health investments. Advocates should leverage the consensus statement on domestic resource mobilisation that emerged from the 2015 Conference on Financing for Development in Addis Ababa to campaign for improving countries' tax policy and tax administration. Options to explore include sales' taxes on alcohol and tobacco, tourist taxes, and redirecting fossil fuel subsidies to health.

#### **Deploy coordinated and targeted donor assistance for vulnerable populations**

Continued donor support for maternal health interventions is most important where need cannot be met by domestic resources, such as in super-vulnerable populations in which location and individuals' characteristics stack against subgroups of women.<sup>10</sup> Development aid for maternal health has increased annually since 2003,<sup>90–92</sup>

which is reassuring in the face of the decline in overall development assistance.

As Kruk and colleagues<sup>72</sup> noted, new initiatives are being developed to maintain momentum for reproductive, maternal, newborn, child, and adolescent health in the SDG era. For example, the Global Financing Facility was launched in July, 2015, to increase, coordinate, and better target donor and domestic funding for women's, children's, and adolescents' health in support of the 2030 SDGs.<sup>87</sup> Still, some development players remain sceptical, citing concerns that the Global Financing Facility will further fragment the global system and undermine the position of UN agencies.<sup>93</sup> Moreover, whether and how such mechanisms will reach the super-vulnerable within their countries is unclear. The next 5 years will be important for the Global Financing Facility to demonstrate its capacity to raise national health resources and effectively improve health.

#### **Effectively employ strategic purchasing and performance-based incentives**

Equally important to mobilising adequate financial resources for maternal-newborn health care is the optimal allocation and efficient use of those resources. As domestic resources increasingly fund such programming, the importance of supporting governments and private financiers to implement strategic purchasing will also grow. Strategic purchasing can be defined as proactively identifying which models of care and interventions to invest in (taking into account cost-effectiveness, burden of disease, and population preferences); determining how they should be purchased (including contractual mechanisms, pricing, and payment systems); for whom they should be purchased (which groups might benefit from subsidies); and selecting which health-care providers to purchase services from—ideally those who can provide the highest quality of care most efficiently, whether public or private sector.<sup>94,95</sup> Not only can this active purchasing approach ensure that scarce resources are allocated appropriately, but also—if designed well—the mechanisms for paying providers can incentivise improvements in performance and quality of care.

Reviews of the effects of financial incentive programmes, including financing based on performance or results and vouchers, on improving the quality and quantity of maternal health service provision suggest these programmes can be successful, especially when users have choice among providers.<sup>96,97</sup> However, result-based financing schemes that reward providers for better outcomes must be thoughtfully designed to avoid unintended consequences, such as only serving the lowest-risk women. Additionally, rigorously monitoring for accountability in result-based financing programmes is key to its effects; and as yet, such measurement remains challenging in many settings of low-income and middle-income countries, particularly regarding equity. Nonetheless, in the next 5 years, particular attention should be paid to

intelligently incorporating performance elements to provider payment systems to improve the efficiency and effectiveness of resource use for maternal health services.

Private-sector providers form a substantial part of health systems in many countries. They are responsible for one of every five deliveries across 57 low-income and middle-income countries,<sup>98</sup> and a majority of care in some settings. Leveraging the power of the private health sector to deliver maternal health services efficiently and effectively is not easy,<sup>99</sup> but through approaches such as contracting and social franchising it can be another important component of strategic purchasing. Contracts set clear expectations for providers, and tie payments to achievement of predefined objectives.<sup>72</sup> If use of private providers for maternal health services grows,<sup>100</sup> contracts between government payment agencies (such as national health insurance schemes) and private providers will be an important component for promoting quality and access.<sup>101</sup> Franchising also has the potential to improve quality and maternal health outcomes in the private sector, but the evidence base is weak.<sup>100,102</sup>

### Priority 5: Accelerate progress through evidence, advocacy, and accountability

#### Develop improved metrics and support implementation research

Research is an essential component of the post-2015 maternal health agenda. Yet research funding is not commensurate with need: only 35% of published research in 2011–14 addressed these problems in high-burden countries. Nonetheless, the number of research papers on maternal health in high-burden countries doubled in 2011–14 compared with the previous 5 years.<sup>103</sup>

On the basis of recent literature reviews,<sup>104,105</sup> the five papers in this Series,<sup>7–10,75</sup> and discussions with the Series' authors, we identified two types of research specifically needed to scale up and accelerate progress in maternal health. The first is on measurement of the causes and levels of morbidity and mortality, vulnerable groups, and on indicators to measure progress of policies and promote accountability, health system capability, content of intrapartum care, and women's satisfaction. Secondly, research into models for implementing care at all stages of the obstetric transition (panel 2) and into methods for scaling up pre-service training of skilled birth attendants is urgently needed.

#### *Measurement: redefining maternal health metrics*

Improvement of measurement and coding of maternal mortality and morbidity, including direct and indirect causes and risk factors, is essential to guide intervention research, set implementation priorities, and improve quality of care, particularly for women and babies most at risk. Better measurement will require standardising definitions and methods of determining and recording direct, indirect, and contributing causes of death, as well as categories of illness and illness severity.<sup>10</sup> Better civil vital

registration systems that accurately and comprehensively document pregnancy outcomes—births, stillbirths, neonatal deaths, and maternal deaths<sup>106</sup>—are needed in many low-income and middle-income countries. The Maternal Death Surveillance and Response, a global strategy that aims to identify and respond to maternal deaths, is a useful start.<sup>107</sup>

Additionally, research that aims to better understand the changing patterns of sociodemographic, obstetric, and medical risk factors is needed. What are the best mechanisms for real-time tracking of pregnancies and their outcomes? How can such mechanisms capture those women who either do not obtain care or seek care outside the formal health-care system? Addressing such issues will be pivotal in effectively and equitably improving maternal health and the quality of care in the coming years of leaving no one behind.

To measure the burden and the ability of health systems to provide quality maternal health care for all, the table provides examples of indicators that cover a number of domains. Some indicators are already widely used (eg, caesarean section rate by wealth quintile); others require development (eg, percentage of women delivering without obstetric intervention), standardisation (eg, percentage with a length of stay of 12 or 24 h after a singleton vaginal delivery in a facility), and validation. This list is not exhaustive, and has yet to include indicators related to important issues such as delays in treatment, timely referrals, use of financial incentives, women's satisfaction, and specific provider skills. However, a subset of these indicators could be used depending on context. For example, in areas with very low coverage of facility delivery (panel 2; stages I and II with maternal mortality ratio >420), managers could focus on barriers to service use (eg, social, geographical, and financial) along with the content of the care delivered; whereas in areas with low maternal mortality (stages IV and V with maternal mortality ratio <70) and high coverage of contacts with antenatal care and facility delivery, morbidity-related metrics, content of care (insufficient and excessive intervention), and women's satisfaction take precedence.

#### *Implementation research: maternal health priorities*

Implementation research aims to understand what, why, and how interventions work (and can be improved) in real-world settings; and requires working with populations affected by the interventions, and with those involved in directing, managing, and providing the services.<sup>124</sup> The appendix illustrates our assessment of high-priority research areas, categorised by the priority areas.

Bridging the gap between priority identification and the implementation of research projects to address persisting or new maternal health needs requires sustained commitment on the part of national governments, donors, and researchers. National governments—especially in low-income and middle-income countries—need to allocate resources to support locally-driven research, and



	Widespread existing experience (example of existing data source)	Issues
<b>Proposed indicator of effect</b>		
Pregnancy-related mortality ratio, preferably cause specific	Yes (vital registration, USA, and Mexico <sup>108,109</sup> )	Captures deaths; need timely and empirically based estimates; use of pregnancy-related definition avoids erratic approach to coincidental deaths
Risk of severe maternal morbidity	Yes (facility-based, UK, <sup>110</sup> or survey, multiple countries <sup>111</sup> )	Captures morbidity, broadens focus from mortality
Percentage of women delivering without obstetric intervention (eg, caesarean section or induction)	No (DHS, Brazil and Denmark medical records <sup>73,112</sup> )	Captures desire to avoid excessive intervention; multiple versions of indicator exist; needs global consensus on definition
<b>Proposed indicator of coverage</b>		
SBA at birth by place of birth (level and sector), and type of provider (midwife, doctor, or obstetrician)	Yes (Ghana DHS <sup>113</sup> )	Captures contact with person theoretically providing routine care, identification of complications, and at least some basic emergency obstetric care; need to ascertain what types of provider are trained to do regarding routine childbirth care and emergency obstetric and newborn care
Uterotonics immediately after birth for prevention of post-partum haemorrhage (among facility births)	No (facility-based, Ecuador <sup>114</sup> )	Captures care at individual level; measures content of routine care of an effective intervention, which has a benchmark of 100%; challenging to measure in absence of good medical records (women's self-report via survey is unreliable)
Percentage with ANC with all essential elements of care	Yes (Ghana DHS, Ethiopia, India, and Nigeria <sup>113,115</sup> )	Captures care at individual level; moves beyond number or timing of ANC contacts to assess receipt of effective care; data to calculate indicator are widely available; essential elements need to be agreed and possibly expanded
Caesarean section rate, by wealth quintile or setting (urban or rural), or both	Yes (DHS, multiple countries <sup>116</sup> )	Captures life-saving intervention for mothers and newborn babies, but since not all women require caesarean, also reflects "too little, too late" and "too much, too soon", and highlights inequitable access
Met need for family planning	Yes (DHS <sup>117,118</sup> )	Important preventive measure, reflects importance of links with other reproductive health services
Postnatal care visit within 24 h of delivery (home births) or length of stay for 24 h with check (facility births)	Yes (Countdown, multiple countries <sup>117</sup> )	Captures contact in immediate post-partum period; for facility delivery, assesses if length of stay is sufficient for postnatal checks; for home births without SBA, assesses coverage of postnatal home visit; need to standardise the adequate period (12 or 24 h postnatally); data could be used to calculate total length of stay after vaginal singleton delivery after facility birth
Percentage of HIV-positive pregnant and post-partum women receiving ART	Yes (Countdown, multiple countries <sup>117</sup> )	Captures integration of maternal health services with general health services; most existing indicators focus on PMTCT, whereas this indicator emphasises women's own need for access to general health services that continue care beyond pregnancy; to operationalise this indicator, a decision would be needed as to whether to measure any ART or long-term treatment for a certain length of time
<b>Proposed indicator of systems output</b>		
Readiness of facility with respect to infrastructure (water, electricity, continuous opening), routine childbirth care (infection prevention, AMSTL, and partograph), basic emergency care (antibiotics, uterotonics, MgSO <sub>4</sub> , manual extraction of placenta, removal of retained products, assisted vaginal delivery), comprehensive care (caesarean section and blood transfusion), staffing	Yes (service provision assessment data <sup>8,119,120</sup> )	Captures facility capability to provide routine childbirth care and emergency care, and is required for the two indicators: availability of emergency obstetric and newborn care, and availability of routine childbirth facilities; operationalisation requires standardisation across range of instruments, including consensus on whether a signal function was performed within a 3-month interval
Availability of emergency obstetric and newborn care facilities within 2 h	No (Ethiopia and Zambia <sup>121,122</sup> )	Captures geographical access to functional emergency care, bolsters desirability of geolocated facility data, assessment of facility capability; experience is growing; best measured with facility censuses, including private sector
Availability of routine childbirth facilities within 2 h	No (Zambia <sup>121</sup> )	Captures routine provision and complements previous indicator at little marginal cost; has advantage of emphasising access to decent care for all deliveries, not just complicated ones
Full-time equivalence of midwives (SBAs) per 100 births	No (Sri Lanka <sup>123</sup> )	Captures human resources available; provides clear understanding of numbers with skills to do effective delivery in relation to numbers of births; need to develop appropriate benchmarks and expected tasks of SBA
DHS=Demographic and Health Survey. ANC=antenatal care. SBA=skilled birth attendant. ART=antiretroviral therapy. PMTCT=prevention of mother-to-child transmission. AMSTL=active management of the third stage of labour.		
<b>Table: Examples of indicators for measuring burden and ability of health systems to provide quality maternal health care</b>		

to build capacity among in-country researchers, including health system experts, epidemiologists, and social scientists. Only when in-country researchers have the training to compete for funding successfully, and countries allocate resources to support such efforts, will research truly reflect the needs of programmes in these countries. At the same time, donors must see the value in—and provide funding for—evidence generation and long-term, data-driven programming that targets vulnerable populations.

### Translate evidence into action through effective advocacy and accountability for maternal health

Stakeholders (governments, donors, multilateral partners, civil society, and private sector) investing in effective and joint platforms for action can mobilise resources, strengthen laws and policies, and promote mutual accountability.

The Global Strategy's Every Woman Every Child advocacy platform supports the delivery of the SDGs, by encouraging partners to act together to leverage financial, policy, and service delivery commitments for maternal

health and related issues.<sup>125</sup> Since its launch in 2015, the Global Strategy has attracted more than 150 commitments from governments and other partners towards its implementation.<sup>126</sup> Partners are further guided by evidence presented in this and other related *Lancet* Series (stillbirth, adolescent health, newborn health, and midwifery), and through related action plans such as the 2015 Ending Preventable Maternal Mortality (EPMM) plan<sup>127</sup> and the Every Newborn Action Plan (ENAP),<sup>128</sup> which have converging priorities.<sup>3</sup> All these documents highlight the need for effective maternal and newborn advocacy within the continuum of reproductive, maternal, newborn, child, and adolescent health care.

Regional advocacy can also play a vital role in reducing inequities and improving quality of care for women and newborn babies. An example is the Campaign for the Accelerated Reduction of Maternal Mortality in Africa, which assists partners to use data and evidence for advocacy through its African Health Stats platform. Country scorecards and other data products can also help parliamentarians, media, and civil society track national performance on regional commitments such as the 2001 Abuja Declaration, which committed countries to spending 15% of government budgets on health.<sup>129</sup> The Global Health Observatory estimates that on average in 2013, these countries allocated 11.4% to health, a substantial improvement compared with an average of 3.1% in 1995.<sup>130</sup> Whether this increase has translated into improved maternal health-specific funding remains unclear. The voice of parents and families is another key influence to be tapped to bring about improved maternal

and newborn outcomes, as reflected in the *Lancet* newborn health Series.<sup>22</sup>

In the transition to the new SDG era, robust national, regional, and global advocacy, as well as accountability efforts, are needed to ensure women's and children's health not only retain their prominence, but that they are seen as cornerstones for achieving other goals, including several that reach beyond health. In the MDG era, the Global Strategy's independent Expert Review Group<sup>131</sup> and the Countdown to 2015<sup>132</sup> initiative provided periodic, scientifically credible feedback on what needed to improve and where.<sup>132</sup> To support the SDGs, successor groups, the Independent Accountability Panel, and the Countdown to 2030 will provide evidence on needs and gaps that can be converted into actionable messages by advocacy actors such as the Partnership for Maternal, Newborn, and Child Health; Women Deliver; White Ribbon Alliance; and others.

### Moving forward

Building on the priorities identified in this Series (panel), interventions known to reduce maternal death (figure 1), and potential implementation priorities by stage of maternal mortality ratio reduction (panel 2), figure 3 schematically represents an action plan for local, national, regional, and global stakeholders to accelerate progress toward improving maternal health. It emphasises that sustained efforts must be defined and initiated at local and national levels, as well as complemented and supported by efforts at the regional and global levels. This plan complements existing action plans, such as the Global Strategy for Women and Children,<sup>125</sup> EPMM,<sup>97</sup> and ENAP<sup>128</sup>

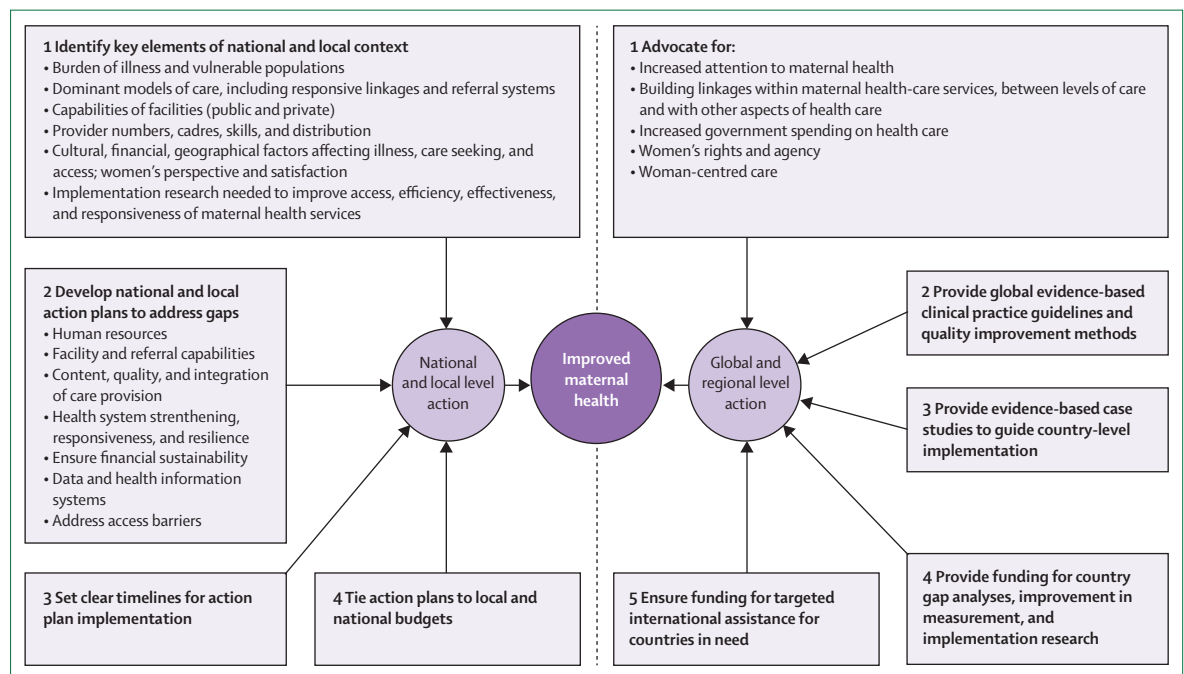


Figure 3: Maternal action plan to accelerate progress towards improving maternal health

by emphasising the need to contextualise local and national-level action, including a careful assessment of the local context, locally-driven action plans, and implementation plans that are tied to local and national budgets. It also emphasises the important interplay between local and global stakeholders, and the relative strengths of each.

National and local stakeholders are best positioned to identify and address key elements needed to ensure effective maternal health-care provision for all women, including adolescents. These elements include assessing the local burden of disease; current models of care; the private sector's role; provider numbers, skills, and working conditions; financial initiatives available and their effect on maternal and newborn care; and the cultural, financial, and geographical factors affecting illness, care-seeking, access, and women's perspectives and satisfaction. It also involves setting measurable, costed, time-anchored goals for human resources and their support; facility capabilities; content, quality, and integration of care provision; and health information systems and data needed. National and local stakeholders will be instrumental in ensuring that such goals are supported by corresponding national and local budgetary allocations, and through collaboration between various levels and sections of government, civil society, private sector, and with other relevant ministries.

At a global and regional level, stakeholders will need to advocate for increased attention to maternal–perinatal health, and ensure women's rights and agency are acknowledged, which includes involving women in their own health care. Global stakeholders should encourage a fundamental shift towards more woman-centred and family-centred care, including more functional linkages between maternal health-care services and other aspects of health care, such as combining family planning and newborn care provision during post-partum care visits or integrating HIV and nutrition services.<sup>133</sup> Although such linkages are not easy to implement and sustain, and although funding silos are often difficult to bridge, this shift is precisely what is needed to realise the maximum possible gains for maternal–perinatal health globally.

Global stakeholders can also help by supporting continued efforts to provide evidence-based clinical practice guidelines, and case studies of programme implementation. Finally, global partners can fund research on measuring maternal and newborn outcomes, implementation facilitators for known interventions, and test integration and linkages with others services, all the while being aware that different contexts are likely to require different implementation strategies.

## Conclusions

This Series, following up on the 2006 *Lancet* maternal survival Series and building on recent related publications (including those on midwifery, newborns, stillbirths, and adolescents), suggests two fundamental issues that need to be addressed to improve maternal health: to ensure the quality of maternal health care for all women, and to

guarantee access to care for those left behind or those who are most vulnerable. In addition, this Series describes, organises, and analyses a large body of information that, if applied, could improve the health and pregnancy experience of millions of women and save thousands of lives worldwide. On the basis of hard-fought experience working for improvements in maternal health during the MDG era, this Series provides a crucial knowledge base to inform actions during the new SDGs for the next 5 years. The priority actions provide a timely update of the evidence similar to themes such as the EPMM or ENAP strategic directions,<sup>3</sup> and are a supportive and more elaborated evidence base to inform the development of plans and priority actions.

Maternal health strategies need to respond to the specific and often rapidly changing population needs as demographics, epidemiology, and economies evolve; and as preferences shift and diversify. This response will require unprecedented collaboration with a wide array of partners to improve equitable access to efficient, high-quality, and respectful maternal health care with functioning referral systems. It will require a fundamental shift towards care centred on the woman and family, with better linkages across reproductive, maternal, newborn, child, and adolescent health, and more, as non-communicable diseases and other maternal illnesses become apparent.

Crucial to achieving equity in maternal health will be the growing pressure on national and regional governments in even the poorest countries to provide universal health coverage—ie, high-quality services available for every woman, everywhere, with financial protection. Maternal health improvements will influence, and be influenced by, achievements within the wider continuum of care; those working on non-communicable diseases, infectious diseases, nutrition, and mental health; and in relation to other SDG targets, from those aimed at ending poverty to those building resilient infrastructure. Finally, as these efforts yield independent and rigorous data, such results can guide national and local governments and global partners in working together to focus on what is needed to reach the SDG target for a maternal mortality ratio less than 70 by 2030, and to attain equitable and accelerated improvement in maternal health.

### Contributors

MK conceptualised the paper and worked closely with CAM, SH, AL, ABF, LH, AKN, ACM, CC, and OMRC on the first draft. CAM provided valuable editorial and technical inputs. LM helped with conceptualisation of the priorities and editorial support, and OMRC and CC provided continuous editorial and technical support. All authors contributed draft sections of the paper, provided input to its overall direction and content, and reviewed each draft of the paper.

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We declare no competing interests.

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