From minding the gap to closing the gap

Science to transform maternal and newborn survival and stillbirths in sub-Saharan Africa in the Sustainable Development Goals era

Executive Summary

4–5 September 2018. Nairobi, Kenya.

The Academy of Medical Sciences

The African Academy of Sciences

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Opinions expressed in this report do not necessarily represent the views of all participants at the event, the Academy of Medical Sciences, Health to African Academy of Sciences or its Fellows.

All web references were accessed in February 2019

Executive summary

A report published in 2009 by the African Science Academy Development Initiative (a collective of 7 African academies of science) entitled Science in action: Saving the lives of Africa's mothers, newborns, and children reviewed the status of maternal, newborn and child health in Africa and highlighted evidence-based ways to save lives.[1,2] Following on from this report, the African Academy of Sciences and the Academy of Medical Sciences organised a workshop in 2018 at which participants discussed the rate of progress in the SDG era, how to improve implementation of proven interventions, novel solutions, and ways to support investment in science and research leadership in Africa.

With only just over a decade to meet the SDGs, there is an ongoing burden of 5.4 million deaths globally, including newborns (2.5 million), stillbirths (2.6 million), and maternal (0.3 million). Africa, with only 13% of the world's population, carries more than half of this burden with 2.3 million deaths per year. Based on current trends, most sub-Saharan African countries won't meet the SDG target of 12 or fewer newborn deaths per 1,000 births and are also at risk of missing targets for maternal mortality reduction.

To close these gaps, there are four Grand Challenges to address, and science and research is crucial in accelerating implementation and developing innovations.

1. https://resourcecentre.savethechildren.net/node/1911/pdf/1911.pdf
2. https://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1000294#ack

Grand Challenges

Grand Challenge 1: Better care during pregnancy

Current status: Only just over half of women in Africa get antenatal care sessions at least four times during pregnancy. Recent World Health Organization (WHO) guidelines recommend the minimum number of sessions during a pregnancy be increased to eight.

Implementation science: Workshop participants agreed research is needed in how to operate the new WHO eight-visit antenatal care package, especially in what are the best ways to deliver antenatal care in different settings. Some aspects of antenatal care could be delivered in primary care or community settings or through novel approaches such as group antenatal care. Research could determine whether vaccines used in high-income countries, such as those for flu and human papillomavirus (HPV) could be successfully deployed in lower income countries. Ultrasound and biomarkers have the potential to accurately date fetuses and more accurately predict high-risk pregnancies for in utero referral.

Discovery science: A greater focus on screening in pregnancy is needed. Better and more affordable diagnostics for a wide range of conditions, including anaemia, diabetes, syphilis, HIV, tuberculosis (TB) and hepatitis could all improve outcomes. Innovations to integrate screening would be valuable; combined tests already exist for HIV with syphilis but could include others. New maternal vaccines such as one for Group B Streptococcus would reduce stillbirths, maternal deaths, neonatal deaths and potentially preterm births. Vaccines that remain effective from the time of manufacture until use without stringent temperature requirements are also needed. Encouraging the use of minimally invasive post-mortems could provide improved data particularly regarding infectious causes of stillbirths, reduce stigma and anxiety for mothers, and prevent subsequent stillbirths..

Grand Challenge 2: Better care at birth

Current status: Improving the quality of care at birth generates a triple return on investment, by reducing maternal and newborn deaths, and also stillbirths. Although now half of births in Africa are in hospitals, there are over 600,000 intrapartum stillbirths in the continent each year, where the death occurs during labour. Almost all of these are preventable with timely, high-quality care at birth.

Implementation science: Participants highlighted an urgent need to identify new labour monitoring systems, following the WHO's decision to stop recommending the use of the partograph. Improved monitoring of high rates of stillbirths is key for accountability and could be included in perinatal audits. More research on the use of clinical audits, feedback and medical dashboards could help spread best practice. Better implementation of the basics, such as handwashing and keeping newborns warm (e.g. with kangaroo care) could have high impact. Maternity waiting homes in places where access to emergency care is difficult and mHealth initiatives may play positive roles. Postpartum haemorrhage (PPH) deaths could be significantly reduced with wider use of tranexamic acid (TXA).

Discovery science: More research on oxytocin analogues misoprostol and carbetocin to prevent PPH in different settings was suggested.

Grand Challenge 3: Better postnatal care for women and their newborns

Current status: Post-natal care (PNC) is a major gap in the continuum of care with much lower coverage than for antenatal care and care at birth. However this is a crucial time for risk of mortality for new mothers and their babies, and also for establishing healthy behaviours such as breastfeeding or family planning.

Implementation science: Improved understanding of when, where and how women want family planning advice and resources could have a significant impact. Better training, including the use of web-based resources that focus on some high-impact postnatal interventions that are missing from medical textbooks, could help. Ensuring the basics are done well at home and in community healthcare settings is vital. Wider use of simple models, decision algorithms and basic technologies could improve outcomes.

Discovery science: Women should be asked what services they want, and solutions must be context-specific. Addressing deficiencies in data on the causes and prevalence of health problems is important. Disaggregated data is most useful. Different aspects of care need to be considered together to inform the development of integrated care plans. Improved diagnostic technologies for conditions including sepsis, pneumonia, TB and Zika are also required for PNC, especially at community primary care facilities.

Grand Challenge 4: Better hospital care of sick newborns

Current status: More than 80% of newborn deaths in 2016 had preventable, treatable causes. Strategies such as UNICEF's Strategy for Health 2016–30 and the WHO's Every Newborn Action Plan have been developed to provide guiding principles to address the problem.

Implementation science: More research is needed on the capabilities of hospitals and their operational contexts linked to data-based minimum levels of clinical care for small and sick newborn babies in resource-poor hospitals. Better data and norms/standards for human resources can help improve staff recruitment. Comprehensive care packages need to be more specifically defined for the care of newborns with prematurity and asphyxia encephalopathy. More work is needed on algorithms to better treat newborns with seizures related to encephalopathy. Participants discussed a data repository to compare different treatments for jaundice.

Discovery science: Research on point-of-care diagnosis of sepsis in newborns, ideally using samples other than blood, is needed, as well as lower cost simpler blood culture and tests for antimicrobial resistance (AMR), and diagnostics for jaundice. Innovative devices for newborn care that are robust and have interoperability such as continuous positive airway pressure (CPAP) machines, infusion pumps, apnoea monitors, pulse oximeters etc. are a key gap. Simpler, cheaper ways to determine gestational age would be beneficial as would low-cost surfactants.

Cross-cutting issues

Closing the gap for African research leadership: Sub-Saharan Africa carries a disproportionate burden of diseases yet only about 1% of published papers are led by Africans. Promising young African scientists find it hard to get exposure to research and research training, and to obtain funding. Research infrastructure more generally is lacking. Women are poorly represented, both in research leadership and across African science. Efforts to identify, nurture and mentor promising African scientists should start at school, with, for example, improved science education, research clubs, science camps and awards schemes. Research should be better integrated into the training of healthcare professionals, through specific research modules and mentorship. Providing support for regional research training programmes, such as through the AAS, could help. Wider use of online tools could help African researchers gain funding. The experiences of the European & Developing Countries Clinical Trials Partnership offer useful insights.

Collaborating across subjects and sectors: Biomedical scientists seeking to improve maternal and newborn survival and reduce stillbirths may make greater progress by working more with those in different sectors. Clinicians, engineers, educationalists and funders all have valuable perspectives. Likewise, participants suggested that future workshops and meetings might benefit from the presence of researchers from other fields, including social scientists, economists and engineers.

Gender: Female representation in African science could be improved through gender sensitive strategic planning of research at university level. More women are needed on science committees at all levels, and this requires intentional change.More visibility of women and access to female role models and mentors in science and programmes are key to supporting younger female researchers. Mother- and baby-friendly policies in the workplace could help, as well as re-entry support for research careers after maternity leave.

Networks: The lack of an overarching umbrella network of organisations working on maternal and newborn health initiatives in Africa was highlighted. Participants discussed carrying out a 'research network mapping' exercise to improve understanding of the current networks, coordination and funding opportunities. Setting up such a network was also discussed.

Bridging the science-policy gap: Doing research does not, in itself, save lives. Scientists who want to reduce maternal and newborn deaths and stillbirths in sub-Saharan Africa must engage with politicians and administrators. Policymakers can drive change more easily when they have access to accurate and concise information. They are more likely to drive change if they are involved in identifying problems and choosing research questions. Presenting the economic advantages alongside the life-saving benefits of new policies and systems may smooth the path to change.

Key next steps

At the conclusion of the workshop, a number of key next steps were agreed by the workshop participants that would help close the gaps identified:

Priorities for research from Africa: Participants proposed using the ideas discussed and generated at the workshop to draw up lists of implementation and discovery research priorities. It was suggested that this process should be open to those who attended the meeting and also to experts who were unable to attend, and that a transparent, online system for the ranking of priorities should be adopted. This will help to inform upcoming funding opportunities. The use of the Child Health and Nutrition Research Initiative (CHNRI) approach to research priority setting was also proposed. It was agreed that a further meeting on this area was necessary to identify these priorities.

Research leadership in Africa: Participants proposed carrying out a mapping exercise to identify existing hubs of researchers and networks as a means to improve coordination and funding of research and avoid duplication. This would also help to identify key gaps by topic e.g. stillbirths, or funding by level e.g. PhD, postdoctoral etc.

Research to policy: Participants felt those in the field should be working to enable more dialogue between policymakers and African academies on maternal and newborn survival and stillbirths. This could be achieved through providing clear policy briefs on key issues to policymakers in Africa as part of efforts to improve outcomes, especially regarding the SDG targets and key actions in various African contexts. In order to effectively target this policy work, there was a commitment made by the AMS and AAS to explore a future policy workshop in 2019 to set out a pathway forward.

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