



Next Generations

MARCH Centre
Report and Strategy
2023–2027



Contents

The world's next generation	03	Adolescents and Young People	14	Multi-country, multidisciplinary research	28
MARCH Vision & Values	04	Survive & thrive	15	Integrating with conditions and sectors that affect health: MARCH synergies across LSHTM Centres	30
Vision	04	Transform	16		
Values	04	What is our next generation of research?	17	Epidemics, Pandemics and Infections	30
People & Partnership	04	Births	18	Violence through the lifecycle	31
Our approach	04	Survive	20	Education	32
MARCH through the lifecycle	05	Thrive	21	Conflict and Humanitarian Crises	33
Our themes	05	Transform	22	Climate and Planetary Health	34
Protecting progress in an uncertain world	06	What is our next generation of research?	23	Implications for MARCH future research	35
Mapping research compared to burden	08	Children	24	High impact and influential research	36
Methods for mapping MARCH-relevant research	10	Survive	25	Engaging with media and the public	37
Research throughout the lifecycle and around the world	11	Thrive	26	Next generation leadership	38
Mapping research around the world	12	Transform	26	Research degrees	40
		What is our next generation of research?	27	Acknowledgements	43

The world's next generation Message from Liam Smeeth

We are at the halfway point to the Sustainable Development Goals (SDGs) and yet many countries are not on track to meet their targets. In 2021 there were almost 9 million deaths of newborns, women, children and adolescents, and stillbirths worldwide, most of which were preventable.

This report highlights the 'four Cs': COVID-19, conflict, climate, and the cost-of-living crisis, emphasising their contextual role and recognising that women, children, and adolescents are often the most vulnerable to these risk factors.

The COVID-19 pandemic and the damaging 'fake news' infodemic which shadowed the pandemic demonstrated the urgent need for evidence and evidence-based decisions. At London School of Hygiene & Tropical Medicine (LSHTM), we are committed to acting with integrity and producing high-quality, impactful, and policy-relevant research. This report presents a systematic review of more than 600 research studies (2018 to 2022) related to Maternal, Adolescent, Reproductive & Child Health (MARCH) Centre topics.

In these uncertain times, this report highlights major ongoing research with impact, and identifies the next generation of research that, if funded, could also make rapid contributions towards achieving the SDGs. Central to this mission is enabling and supporting next generation research leadership. We are especially delighted to have jointly developed and commenced co-delivery of a new Master's programme in partnership with the University of Ghana. The programme is designed to advance sexual and reproductive health policy and planning, and supports dedicated scholarships for African students. We hope that more programmes like this can be launched, alongside PhD networks, as equitable partnerships, to help realise MARCH's mission of improving health worldwide for every newborn, every adolescent, and every woman.

Highlights include:

Across disciplines:

MARCH is one of the largest group of researchers worldwide (>500 members) working across multiple disciplines on the health of adolescents, women, and children. Many studies involve a range of fields including epidemiology, economics, health systems, and other social sciences.

Around the world:

MARCH researchers are present in our Units in the Gambia and Uganda as well as the National University of Singapore and we have partners across the globe. Between 2018 and 2022, 667 LSHTM studies were relevant to MARCH topics. These studies reached every continent, with the highest density in Africa, where the burden of disease is also highest. Many studies were multi-country, and more than 100 were intentionally global in reach. Strength comes from juxtaposing high-income and low- and middle-income country research.

Through the lifecycle and beyond survival:

MARCH has strong linkages and works synergistically with many other LSHTM Centres on conditions that run through the lifecycle such as infections, nutrition, chronic conditions, mental health, and violence.

Beyond health into other sectors:

Education, humanitarian emergencies, violence, and climate change all impact health through the lifecycle, and MARCH researchers work with members of other LSHTM Centres to expand their inter-sectoral research, across all our themes.

Impact beyond publications:

Exemplified by the leading role of MARCH Centre staff in high-profile The Lancet series, influencing UN targets, and as part of major multi-partner efforts to bring evidence to action. Dedicated training of thousands of next generation researchers, practitioners, and policy makers each year.



Professor Liam Smeeth
Director, London School of Hygiene & Tropical Medicine

L Smeeth

MARCH

Vision & Values

Vision

To improve women's, children's, and adolescents' health worldwide.

Values

We are committed to:

- Research excellence.
- Relevance to policy and programmes, especially in the highest burden settings.
- Raising the next generation of research leaders to improve the health of women, children and adolescents.

Our approach

MARCH amplifies innovation, research, and evidence-based policy by promoting collaboration and communication inside and outside LSHTM, and between researchers and policymakers across a range of disciplines and high-, middle-, and low-income settings. We cover all parts of the research pipeline:

- **Description:** Observational epidemiology, high-quality national and global estimates, and social science theory and analyses to inform action.
- **Discovery:** Understanding infections, genetic and epigenetic risks, and delineating risks for adverse outcomes, especially during the crucial windows of pregnancy, the first two years after birth, and adolescence.
- **Development:** Innovations in diagnostics, devices, and strategies, such as improving quality of care.
- **Delivery:** Intervention and health systems research, including complex evaluation with economic and policy analysis.

People & Partnerships

MARCH Centre members include more than 500 researchers at the London School of Hygiene & Tropical Medicine, spanning expertise from anthropology to zoonoses, including clinical care, lab science and the social sciences. Particular disciplinary strengths are in epidemiology, demography, and health systems, as evidenced in the many multi-country complex evaluations in which MARCH Centre members are involved. As a research Centre focused on women, newborns, children and adolescents, we work alongside colleagues in many other topic focused Centres across LSHTM and are committed to equitable collaborations with global partners and funders.

People

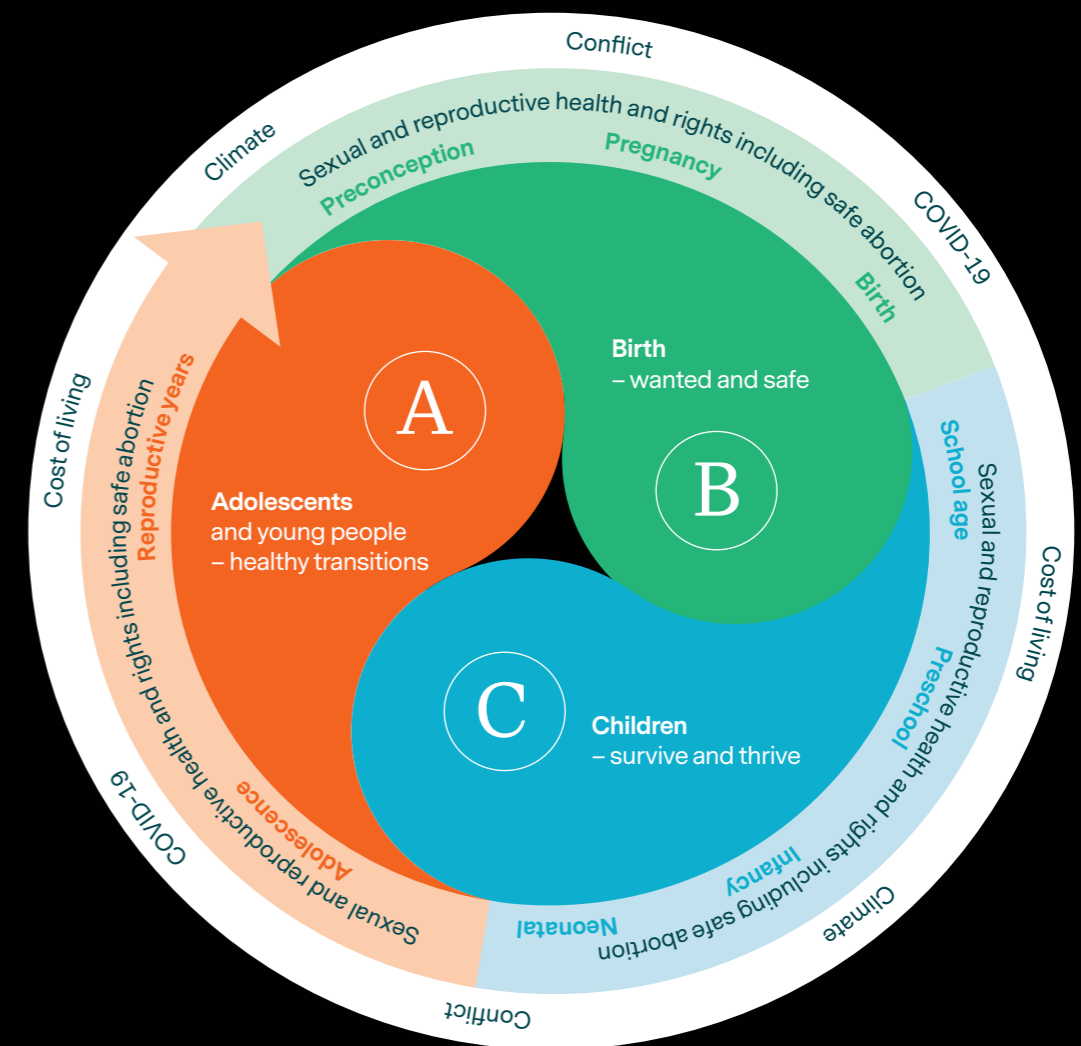
>500 Researchers working through the **lifecycle** on three themes:

**Adolescents
Births
Children**

> 50 different disciplines across the research pipeline from discovery to delivery science, including important emerging areas such as climate change and commercial determinants of health

→ Building the next generation of researchers with hundreds of MSc and PhD students, including 43 students on the new MSc Sexual and Reproductive Health Policy and Programming co-run with University of Ghana

MARCH through the lifecycle



Our Centre is organised according to three interconnected themes:

- A** Adolescents and young people
- B** Births
- C** Children

Additionally, we have a **sub-theme on Climate**, which cross-cuts the A,B,C themes. Each theme offers Centre members fora to exchange ideas, taking advantage of the unique multidisciplinary strengths of LSHTM. Each is led by two academics and supported by MSc Student Liaison Officers (SLOs).

Life course and Lifecycle

The term life course refers to an approach offering a way of linking early life experiences to later life outcomes, such as the exposure to early life risk factors and their consequences for later life health (Alwin, 2013). The lifecycle refers to a series of stages, across the life span, such as childhood and middle age, which characterise the course of existence of an individual (Alwin, 2013). MARCH is centred on this human lifecycle, with a particular focus on the lifecycle stages that are most vulnerable to health risks yet are also crucial points where interventions may have lifelong effects on health and social capital: birth and pregnancy, childhood, and adolescence.

Protecting progress in an uncertain world

2023 marks the halfway point towards the Sustainable Development Goals (SDGs) 2030 Agenda and yet we are far from halfway to achieving the targets. The SDGs framework recognises the interconnectedness of sectors and big issues affecting human life and wellbeing.

The United Nation's Global Strategy for Women, Children and Adolescents' Health, 'Protect the Promise', sounds a warning, stating that "women's and children's health has suffered globally, as impacts of conflict, COVID-19 pandemic and climate change converge with devastating effects on prospects for children and young people and women's rights and health." Reproductive, maternal, newborn, child, and adolescent health has never been more affected by multiple crises, and a multi-sector life course lens is essential for future research and advocacy, to protect the health of women, children, and adolescents.

The burden related to women, children, and adolescent health remains one of the largest worldwide, with almost 9 million deaths annually. There also continue to be huge inequities with the greatest burden of the 1.9 million stillbirths, 1 million newborn and 5 million under 5 deaths being in sub-Saharan Africa. In 2020, a woman's lifetime risk of dying from maternal causes in sub-Saharan Africa was 1 in 37, compared to 1 in 4800 in Europe and North America. All these inequalities reflect health-systems barriers to life-saving care, and also wider socio-cultural, economic, and political issues including significant reversals of rights. In this context, the US Supreme Court reversal of the Roe v. Wade decision on safe abortion care has undermined fundamental reproductive rights and access to reproductive care, not just in the US but also around the world, with the impact being greatest on marginalised groups, those living in poverty, and those in humanitarian settings, who are more vulnerable to sexual violence and unwanted pregnancy but have least access to life-saving healthcare. The reversal of Roe versus Wade reflects the concerning rise of authoritarian, populist movements in many countries around the world, which are typically associated with restrictions in reproductive rights and reversals in gender equality, with inevitable consequences for reproductive health.



Professor Susannah Mayhew
Hygiene & Tropical Medicine Professor in health policy, systems and reproductive health, Co-Director of the MARCH Centre

Policy impact for over 100 yrs for women's and children's health at LSHTM

LSHTM founded in 1899 with a focus on:

- Infections especially malaria
- Water & Sanitation, Hygiene
- Research methods (e.g. randomised controlled trials)

75 years

of maternal and child health, and for nutrition

35 years

for maternal mortality, sexual & reproductive health

15 years

for adolescent health

10 years

for newborn health, stillbirths & for child development

→ Since the MARCH Centre launched in 2009, researchers have published thousands of papers, often with major policy influence & impact, including many *The Lancet* series

→ LSHTM's research ranked number 1 for impact by UK funders in the results of the UK Government's Research Excellence Framework; the assessment exercise highlights world-leading research environment and impact on people and policy, with over half of the highlighted case studies related to MARCH topics

The challenges facing MARCH issues can be summarised by three, often intersecting, crises:

Climate:

Lack of progress on climate and environment related targets (under Goals 12-15) is particularly striking, reflecting a lack of political will by those countries most responsible for anthropogenic climate change. This is particularly concerning since climate and environmental change disproportionately affects women and children, as research by MARCH members demonstrates. Climate disasters and environmentally stressed livelihoods can lead to a rise in gender-based violence and violence against children as a result of increased individual stress, insecure living conditions, and child separation. Extreme heat can worsen maternal, neonatal and birth outcomes, increasing the risk of hypertension disorders, gestational diabetes and antenatal haemorrhage resulting from increased heat stress on the body during pregnancy. Climate disasters and climate-induced migration interrupts access to sexual and reproductive health services, including contraception, particularly for women, children, and adolescents in low- and middle-income countries (LMICs) who have contributed the least to global greenhouse emissions. Changing climates affect crops and food security which is particularly detrimental for maternal and newborn nutrition and can have lasting effects on child development. Eco-anxiety, the chronic fear of environmental doom, is known to be rising, especially among young people, as the Art of Health Breath In competition organised by The Health Research Unit Zimbabwe highlighted. The World Health Organization (WHO) stated that "The climate crisis is also a health crisis", affecting all of us throughout our lifecycle. MARCH Centre members spoke at the United Nations Framework Convention on Climate Change's Conference of the Parties, COP26 and COP27, on the need for reproductive, maternal, newborn, and child health (RMNCH) to be central in efforts to adapt to the impacts of the climate crisis. Initial successes are specific references to sexual and reproductive health and rights (SRHR), including family planning, maternal and child health, and "gendered vulnerabilities", in the 2022 6th Assessment Report of the Intergovernmental Panel on Climate Change (IPCC). The new stand-alone financing facility for Loss & Damage is also an important entry point for RMNCH, but there is a long way to go.

COVID-19 and other emerging infections:

The COVID-19 pandemic caused nearly 15 million deaths between 2020-21, with 10.5 million children losing a parent or caregiver. The pandemic underlines stark inequities in access to healthcare and shows how much more investment is needed to maintain services in the face of an outbreak. In many countries, including high-income countries, RMNCH indicators worsened during the pandemic, as access to routine healthcare services was restricted and incidence of gender-based violence increased. The pandemic also spotlighted isolationist politics of many high-income countries who stockpiled vaccinations for their own use, while decreasing both bilateral and multilateral aid to LMICs.

Conflict:

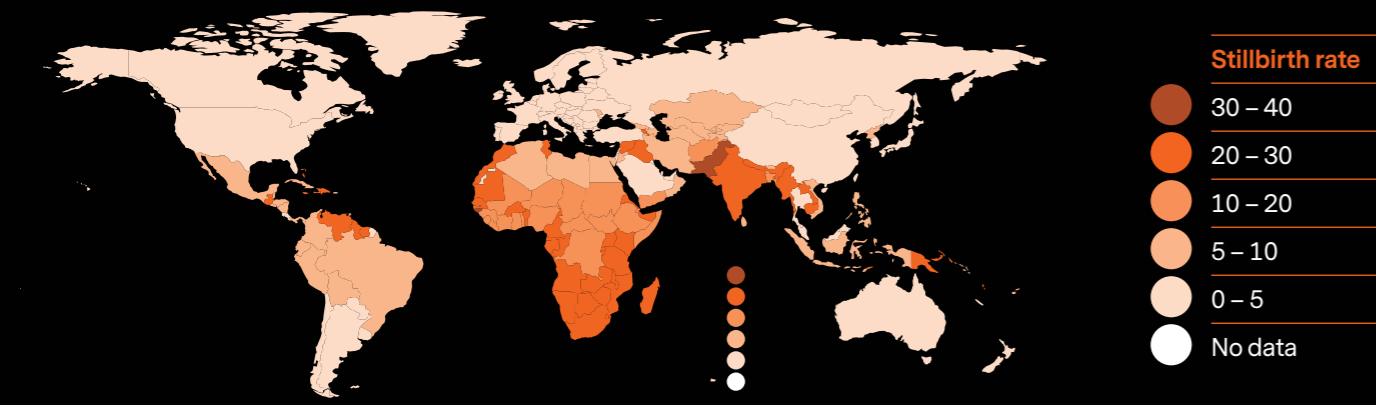
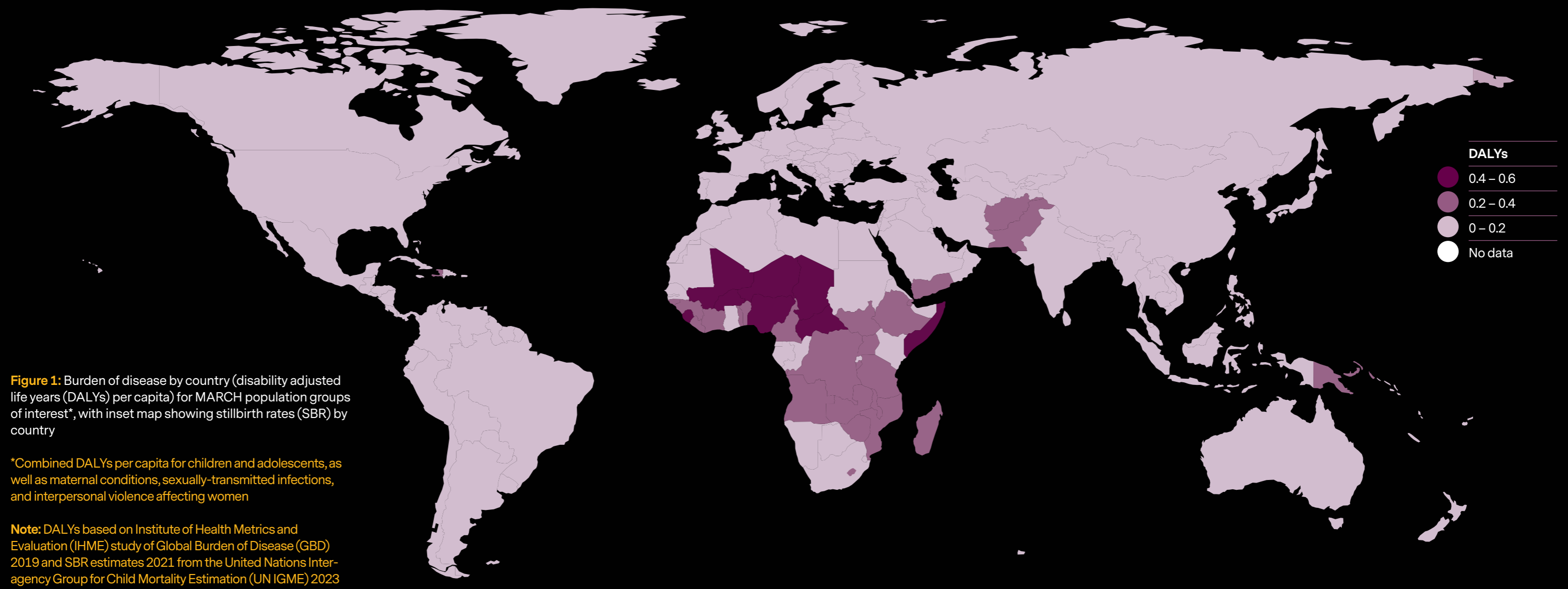
Conflict continues in all continents, including Europe, displacing millions, with the United Nations High Commissioner for Refugees estimating the number of forcibly displaced people globally at 79.5 million and 274 million people requiring humanitarian assistance. These are some of the most vulnerable and marginalised groups facing widespread stigma and severe restrictions on access to essential healthcare and education services. The Russian invasion of Ukraine has also precipitated a global energy crisis and worsened global food security.

MARCH Response

The world faces severe uncertainty and inequality, yet there are opportunities for action. Stronger and more diverse voices are championing justice including the call to decolonise global health, and social movements like Black Lives Matter and Birth Strike for Climate. Many of these are led by young people, representing current and future generations. At LSHTM, we have a long history of transforming health around the world, through research, policy impact, and leadership development, that we will continue to build on. The MARCH Centre brings together one of the largest research groups worldwide with an explicit focus on RMNCH with cross-disciplinary health and intersectoral expertise. Our 2023-27 Strategy and Report provides data to assess strengths and gaps in our work and provide an evidence-informed vision to better protect and accelerate progress through the lifecycle. This document reviews MARCH-related research across the world, including the MRC Units in The Gambia and Uganda and our institutional partner the National University of Singapore. We highlight big issues in our core themes, and our new cross-cutting theme on Climate, and summarise key MARCH-related challenges that colleagues in other LSHTM Centres are addressing. We also reflect on how these efforts translate into publications and impact. Finally, this document sets out synergies and implications for future research and action by MARCH to inspire and support the next generation of researchers, research leaders and decision makers across the world.

Mapping research compared to burden

Mapping burden around the world for women, children and adolescents



Ten Countries with highest rates

Highest rates of DALYs

- Venezuela
- Central African Republic
- Mali
- Somalia
- Chad

- Niger
- Burkina Faso
- Nigeria
- Sierra Leone
- Guinea

Highest rates of stillbirth

- Guinea-Bissau
- Pakistan
- Somalia
- Democratic Republic of Congo
- Djibouti

- Lesotho
- Central African Republic
- South Sudan
- Afghanistan
- Chad

Methods for mapping MARCH-relevant research

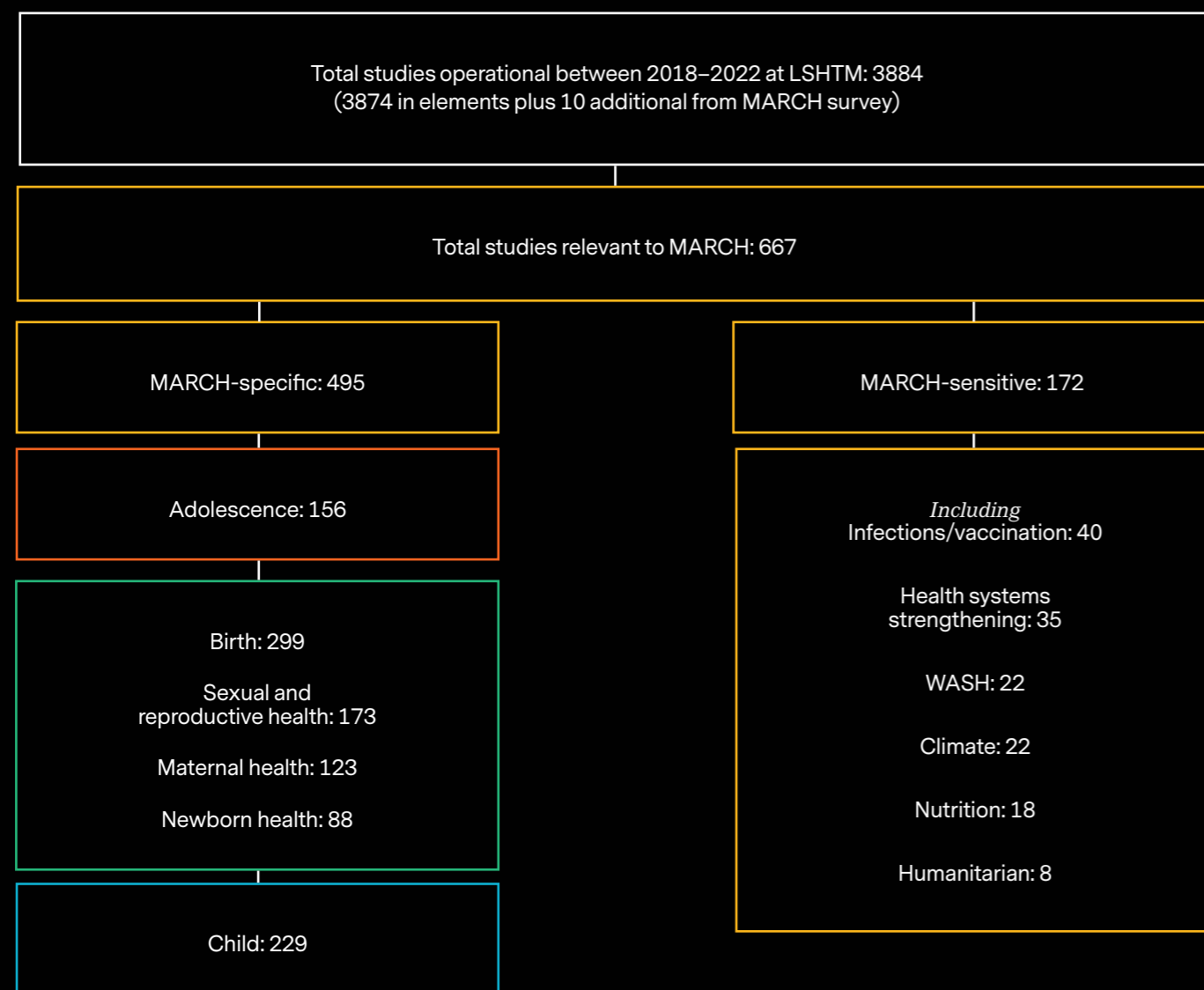
The LSHTM Elements database was screened to identify grants relevant to MARCH topics and A,B,C lifecycle stages, that were active at some point between 2018 and 2022. The cross-cutting MARCH Climate theme was new in 2021 so was not included but will be mapped in future. These grants were cross-checked with those reported in a survey among LSHTM researchers in 2022 asking for information on MARCH-related research. The resulting dataset was reviewed by the MARCH leadership team. Studies were categorised by relationship to A,B,C themes and marked as either MARCH-specific or MARCH-sensitive. Data about country of study was extracted from Elements labels, grant titles, and descriptions.

Quantitative analysis was conducted using Stata/SE 17. A major strength of this analysis is low selection bias, because LSHTM Elements was used as the data source. However, an important limitation is missing data and/or misreporting in Elements, e.g. for country of study. We tried to overcome this by manually checking country of study.

→ **MARCH-specific: particularly concerning one or more of the A,B,C lifecycle stages.**

→ **MARCH-sensitive: not concerning A,B,C lifecycle stages particularly, but looking at issues that impact all (or later) lifecycle stages, e.g. a WASH intervention that affects everyone in the community (and therefore is relevant for A,B,C themes).**

Figure 2: LSHTM studies active during 2018-2022, split by relationship to MARCH topics (n=3,884)



Research throughout the lifecycle and around the world

Figure 3: Research studies related to MARCH topics according to A, B, and C Themes

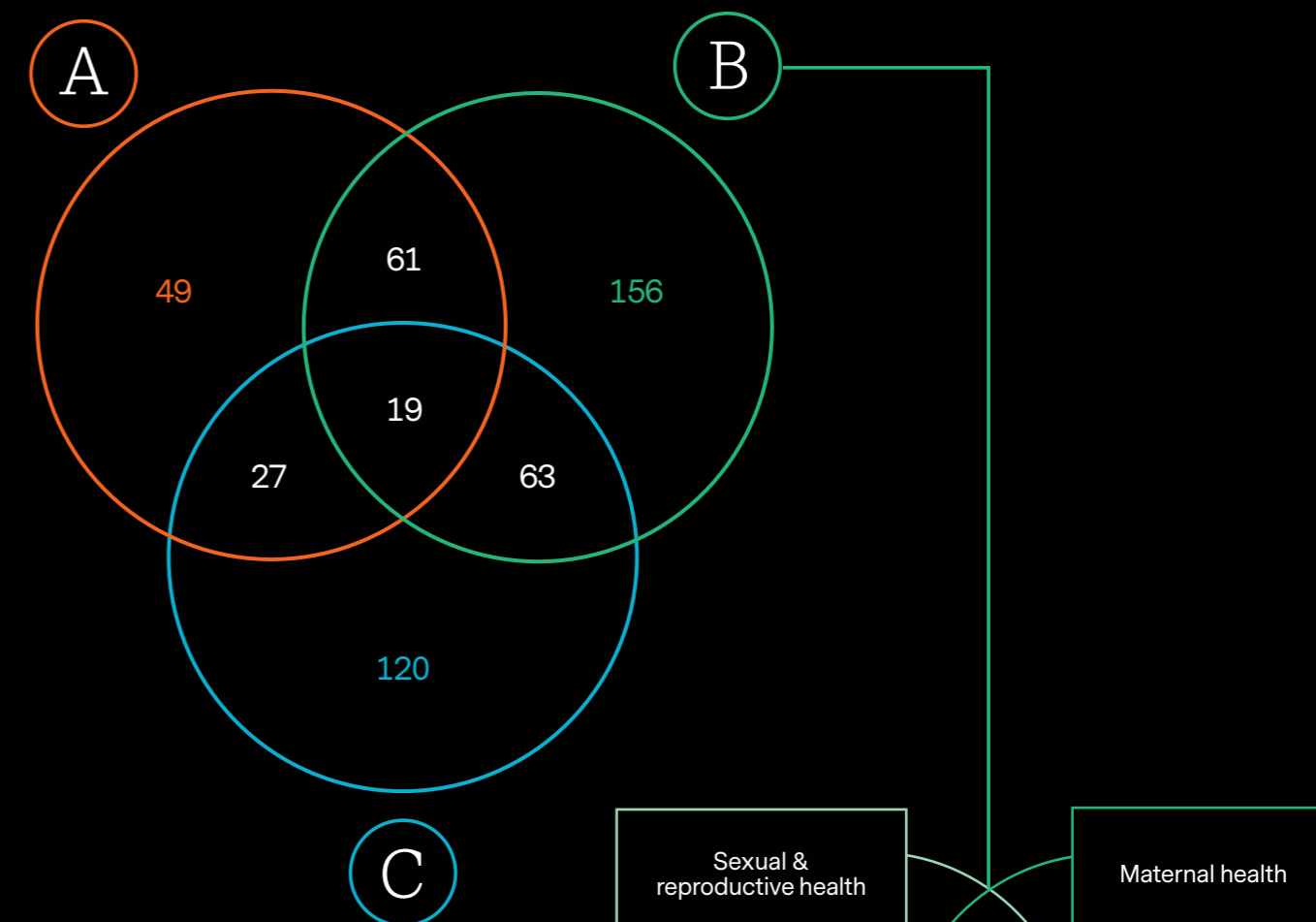


Figure 3a: MARCH-specific studies active during 2018-2022 by theme (n=495)

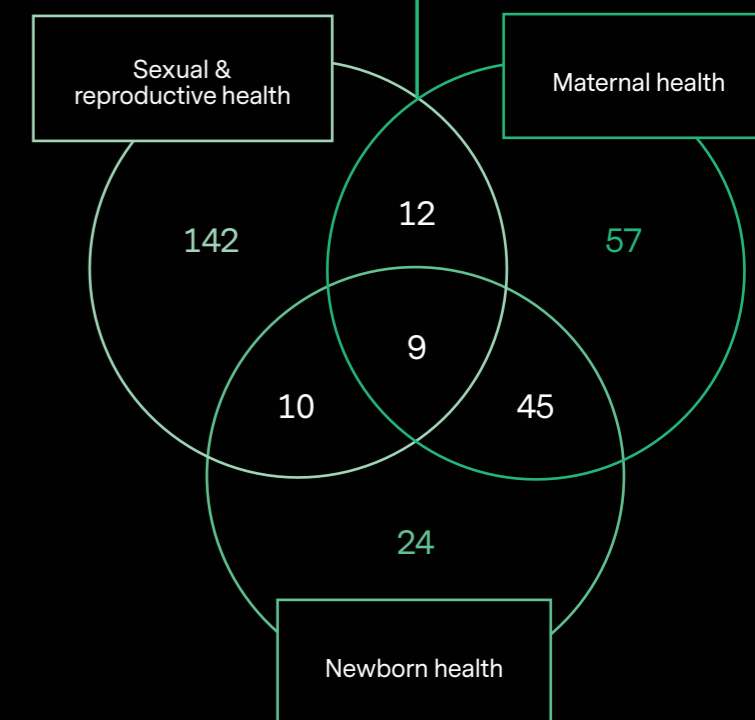
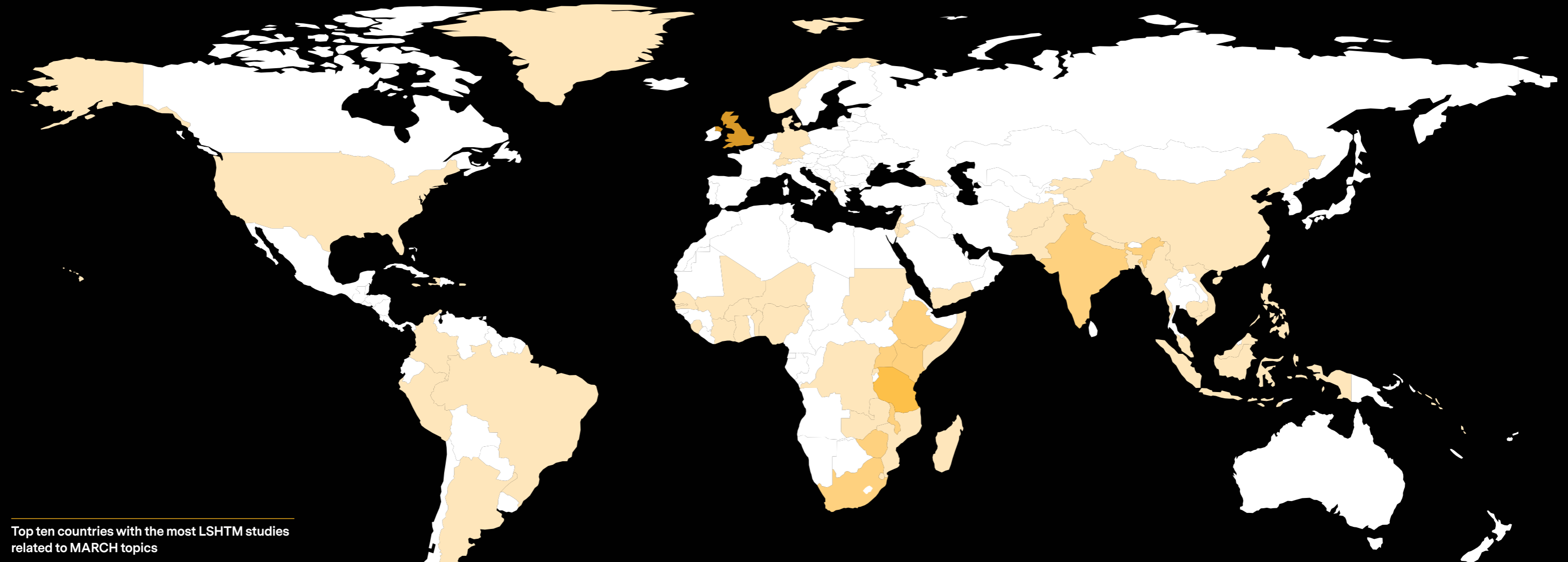


Figure 3b: MARCH-specific studies active during 2018-2022 by birth sub-theme (n=299)

Mapping research around the world



Top ten countries with the most LSHTM studies related to MARCH topics

Country	No. of Studies
1. United Kingdom	85
2. Tanzania	58
3. Kenya	39
4. Zimbabwe	39
5. Uganda	34
6. India	33
7. Ethiopia	29
8. Malawi	27
9. South Africa	26
10. Gambia	19

Number of Studies

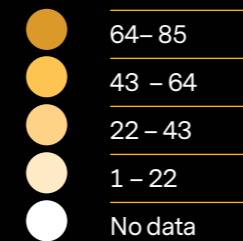


Figure 4: LSHTM studies active during 2018-2022 that are relevant to MARCH Centre topics, by country studied (n=501)

Note: Data from LSHTM Elements and MARCH online survey

Adolescents and Young People Healthy Transitions



Young people are crucial to the future of all societies. Demographic changes, including improved child survival, mean that the proportion of adolescents and young people aged 10-24 is growing in many populations, with a total of 1.8 billion worldwide. Ensuring that young people's needs are met and helping them to reach their potential is crucial for health and wellbeing now and in the future.

Transition to adulthood is a part of the lifecycle that presents unique opportunities to promote health and positive social change. Adolescence is crucial for physical, emotional, and cognitive development, with impacts stretching into adulthood. Environmental exposures, habits formed, and decisions made (e.g. choices about smoking, alcohol, nutrition, and sexual practice) can have a profound effect on both an individual's health through the life course, and the health and wellbeing of those around them. Deprivations during childhood may be amplified or ameliorated. Climate change is having an impact on adolescents' overall wellbeing including their mental and physical health. Adolescents are key actors in efforts to make changes to reduce the extent and impact of the climate crises.

Within MARCH, we have been actively involved in providing evidence for policy, working closely with the Lancet Commission on Adolescent Health and contributing to the WHO's Global Accelerated Action for the Health of Adolescents (AA-HA!), and the Global Strategy for Women's, Children's, and Adolescents' Health. We tackle the major health challenges for adolescents and young people, and work against young people's exclusion from political and social decision-making by putting participatory approaches at the heart of our research.

●● We work against young people's exclusion from political and social decision-making by putting participatory approaches at the heart of our research



Burden Now



>1.5 million

deaths amongst adolescents and young adults each year



Mortality rate among adolescent boys is **38%** higher than that of girls

Top causes of adolescent and young adult deaths:

1. Injuries & interpersonal violence
2. Communicable, nutrition, maternal causes
3. Non-communicable diseases
4. Self-harm



1.8 billion adolescents and young people, which is over **22%** of the world population

→ Adolescence is a key opportunity to address & prevent risk factors for illness in later life, especially non-communicable diseases & mental health issues.

Survive and thrive

The leading causes of mortality among adolescents are mostly preventable and include infections such as HIV/AIDS, injuries, non-communicable diseases including mental health, and pregnancy complications. LSHTM has world-leading research on many of these areas as these examples show:

Infectious diseases:

We undertake projects to evaluate vaccine safety, uptake, and effectiveness for infections with high mortality rates among adolescents including malaria, meningococcal and pneumococcal infections, human papillomavirus (HPV), and Ebola virus disease. For example, the School-based Treatment with ACTs to Reduce Transmission of malaria (START) trial of school-based treatment to reduce malaria transmission in Uganda using intermittent preventive treatment (IPT), and the Dose Reduction Immunobridging and Safety Study of Two HPV Vaccines in Tanzanian Girls (DoRIS) trial is assessing whether one dose of HPV vaccine produces a similar immune response as the standard three doses. A student on the LSHTM-Nagasaki joint PhD programme is researching how to contextualise HPV vaccination decision-making processes among adolescent girls in Japan. The Zipime Weka Schista! (Do self-testing sister!) study aims to integrate home-based self-sampling and self-testing for the screening of multiple genital tract infections in Zambia, including female genital schistosomiasis, HPV, trichomonas, and HIV, as an empowering and cost-effective strategy.

HIV/AIDS:

Young people are less likely to undergo HIV testing, and those who test positive have poorer HIV-related outcomes than adults. Evidence-based strategies are needed to improve early diagnosis, access to treatment, and adherence. LSHTM staff lead studies to provide such evidence, including the Zimbabwe study for Enhancing Testing and Improving Treatment of

HIV in Children (ZENITH) trial – the first trial to show that community-based support significantly improved viral suppression among 6-15-year-olds in Zimbabwe. The HPTN 071 (PopART) cluster randomised trial of a community-based intervention in South Africa and Zambia found that universal testing and treatment reduced population-level incidence of HIV infection. LSHTM lead the Community-based interventions to improve HIV outcomes in youth (CHIEDZA) trial in Zimbabwe investigating community-based interventions supporting the whole HIV care cascade. We also co-led the Bronchopulmonary function in response to azithromycin treatment for chronic lung disease in HIV-infected children (BREATHE) trial which evaluated whether azithromycin prevented worsening of lung function and reduced acute respiratory exacerbations in 6-16-year-olds living with HIV-associated chronic lung disease in Zimbabwe and Malawi.

To better understand the experiences of young people living with HIV, we are working with a longitudinal cohort of adolescent girls living with HIV in Zambia using ethnographic and participatory methods and evaluating a support group intervention for adolescent girls living with HIV. Designed by the LSHTM-led STRIVE consortium, the EMPOWER study assesses whether it is feasible, acceptable and safe to offer oral pre-exposure prophylaxis (PrEP) as part of a prevention package that addresses gender-based violence, stigma, and HIV in young women aged 16-24 in South Africa and Tanzania.

The STRIVE consortium's work on the structural drivers of HIV includes a three-country qualitative study using mapping and participatory photovoice methods to investigate the impact of alcohol availability and advertising on the lives, communities, and HIV risk of young people in India, South Africa, and Tanzania.

Targets in this Generation



End preventable deaths and morbidity

SDG 3.3: By 2030, end epidemics of AIDS, tuberculosis, malaria, NTDs & combat hepatitis, water-borne diseases & other communicable diseases

SDG 3.4: By 2030, reduce by 33% premature mortality from non-communicable diseases & promote mental health & well-being

SDG 3.6: By 2030, halve the number of global deaths and injuries from road traffic accidents

AA-HA: Ensure national policy frameworks recognize the importance of meaningful engagement of adolescents & youth

SDG 3.8 Universal health coverage to be achieved by 2030

SDG 4: Inclusive equitable quality education for all by 2030

Sexual and reproductive health and family planning:

Improving uptake of contraception prevents unintended pregnancy which reduces pregnancy complications and unsafe abortions. LSHTM staff led projects including evaluating the use of mobile phones to increase use of contraception in Bolivia, Tajikistan, Palestine, and Bangladesh, and the use of an online service to improve uptake of contraception in the United Kingdom (UK). LSHTM is evaluating Adolescents 360, a Population Services International (PSI) intervention to increase the use of modern contraceptives among adolescent girls (10-19 years) living in Ethiopia, Nigeria and Tanzania. In the UK, the National Survey of Sexual Attitudes and Lifestyles (NATSAL) has been running since 1990 and is a major source of data informing sexual and reproductive health

policy. The Sexually Transmitted Infections in CHIEDZA (STICH) trial in Zimbabwe is investigating the impact of sexually transmitted infection (STI) management in 16-24-year-olds on population prevalence of STIs.

Nutrition:

LSHTM collaborate on the Olympic Regeneration in East London (ORIEL) study which aims to understand how the social environment influences food behaviours and physical activity during the transition from early to later adolescence. The GAP study (Growth in Adolescence) in Malawi focuses on describing current prevalence of adolescent stunting, cognitive function, body composition and physical activity. The Vitamin D3 and calcium carbonate supplementation for adolescents with HIV to reduce musculoskeletal morbidity and immunopathology (VITALITY) trial in Zimbabwe and Zambia is evaluating the impact of vitamin D and calcium supplementation on musculoskeletal health and immune regulation in children and adolescents living with HIV.

Mental health:

Over half of mental health issues start in adolescence. Prevention, early diagnosis, and treatment are essential to enable young people to thrive. LSHTM studies include the recently completed Strengthening Evidence Base on School-based Interventions for Promoting Adolescent Health (SEHER) trial in Bihar, India which showed significant improvements in school climate and mental health outcomes through a whole-school intervention led by a lay health worker.

Rates of self-harm are high and rising in young people. In collaboration with the Institute of Psychiatry, King's College London, and Childline, we are piloting an online decision aid to help young people who self-harm on where to get support that best suits their current needs.

Disability:

Conducted with the LSHTM International Centre for Evidence in Disability, a cluster randomised trial of a smartphone-based visual impairment screening tool among Kenyan schoolchildren, found that training teachers to conduct eye exams using the smartphone increased referrals to hospital for visual impairment.

Improving health services:

'This Sickle Cell Life' project works with young people aged 13-21 with sickle cell to improve understanding of their experiences and priorities, with the aim of improving transitions between paediatric and adult health services. It is a longitudinal, participatory, qualitative project in several UK sites, working with young people, carers, and clinicians. The Dialogue, Evidence, Participation and Translation for Health (DEPTH) research group work on improving participation in health research and practice.

Transform

Keeping girls in school and delaying marriage:

The STRIVE-funded Samata programme is designed to improve the quality of life of adolescent girls from marginalised communities in Karnataka, south India, by supporting girls to complete secondary school, delay marriage, and prevent entry into sex work.

LSHTM also leads a portfolio of studies evaluating the impact of the Determined, Resilient, Empowered, AIDS-free, Mentored and Safe (DREAMS) partnership – layered interventions promoting health for adolescent girls and young women, evaluating how the programme changes empowerment and sexual health in Kenya, South Africa and Zimbabwe.

Sports-based interventions:

Sport presents an opportunity to engage young people in discussions on a range of issues, including health. The STRIVE-funded programme, Parivartan for Girls, is a demonstration project engaging girls aged 12-16 from a slum in Mumbai to coach and mentor girls in Kabaddi, the traditional Indian contact sport, helping challenge social norms limiting girls' access to public spaces.

WASH:

Studies to improve water, sanitation and hygiene (WASH) facilities include support of the Indian and Tanzanian national sanitation campaigns and designing Myanmar's national handwashing strategy. We are also involved in studies to help girls improve menstrual hygiene in Uganda, the Gambia, Tanzania, Zimbabwe, and with girls and young women with disabilities in Nepal

School-based interventions:

The Y-Check studies in Zimbabwe, Tanzania and Ghana will evaluate the health and educational benefits of novel comprehensive health and wellbeing check-up visits to adolescents in schools and community settings. The Positive Choices trial in England is evaluating a whole-school social marketing intervention to promote sexual health and reduce health inequalities.

Gender-based violence:

In the UK, we collaborate on Project Respect which aims to prevent dating and relationship violence among UK secondary school students. In Uganda, we co-led the Good Schools Study, which evaluated the Good School Toolkit, developed by Ugandan non-governmental organisation (NGO) Raising Voices, which aimed to reduce physical violence against children by school staff and other violence against children in schools.

What is our next generation of research?

Resilient healthcare systems:

Compared with other populations, adolescents and young people have low, inequitable levels of access to health care. More attention is needed if age group are to benefit equitably from investments in universal health coverage. We will help design and evaluate resilient healthcare systems catering to needs of adolescents and young people, understanding and improving transitions between paediatric and adult healthcare.

Integration of services for adolescents:

Existing models of integration of HIV and SRH services will be expanded to include advice, support, treatment, and counselling for other issues affecting adolescents including mental health, nutrition, substance use, and STIs

Climate change:

We will explore the impact of climate change on adolescent health and wellbeing, and work with adolescents and young people to develop solutions that will help ensure that adolescents can thrive despite the changing climate.

Innovative, participatory research methodologies:

Adolescent interventions are often multi-component and take place in complex community or school settings. We will develop and refine evaluation methodologies that are able to capture the impact of interventions on different aspects of adolescent wellbeing, and adolescent-friendly and engaging data collection tools. Young people are often excluded from decision-making that directly affects their lives. Ethical research with young people aims to take account of their voices and experiences right through the research process. Many interventions are imposed, and even well-intentioned health messaging can imply that young people are reckless and irresponsible, contributing to negative stereotyping. Our research will continue to develop and maintain positive working relationships with young people and ensure young people are involved in projects about them. "Nothing about us without us".

Research Gaps A

1 Resilient healthcare systems

2 Integration of services for adolescents

3 Climate change

4 Innovative participatory research methodologies



Births: Sexual, Reproductive, Maternal, and Newborn Health



The Birth theme addresses sexual, reproductive (including abortion), maternal, and newborn health, as well as prevention of stillbirths. We cover programmes related to preconception, family planning, pregnancy, care at birth, and postnatal period as well as safe abortion services.



Burden Now B

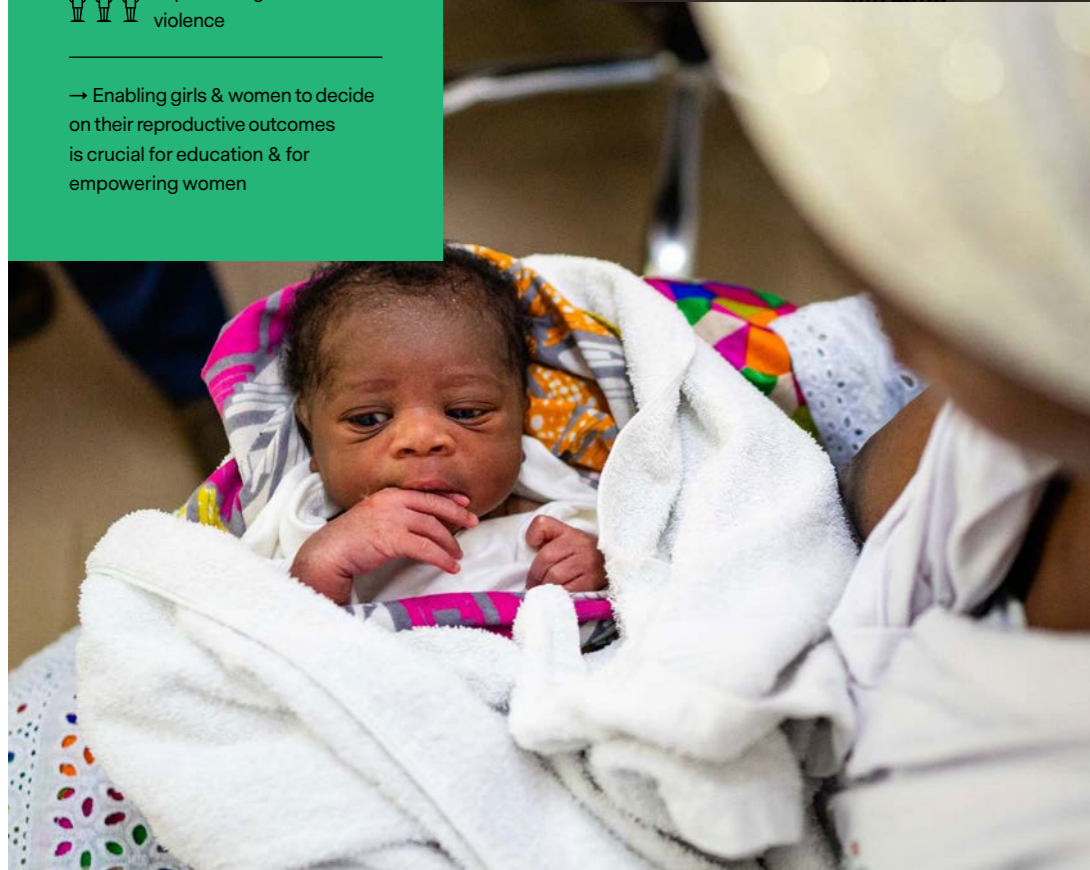
220 million
women with unmet need for family planning

97% of these women live in low & middle-income countries

73 million
abortions occur worldwide each year, almost half of which are unsafe

1 in 3 women globally experience gender-based violence

→ Enabling girls & women to decide on their reproductive outcomes is crucial for education & for empowering women



Reproductive Health: Births that are wanted

Pregnancies planned:

Family planning offers enormous benefits, empowering girls and women to choose when to have children, and how many. This improves the health and survival of mothers and children, acting as a powerful lever for education and against poverty. Yet, globally, 220 million women continue to have an unmet need for family planning, 97% of whom live in LMICs. Far too many women die of pregnancies that they did not want to have, either through unsafe abortion or during childbirth. Around 450,000 of the six million child deaths that happen each year could be prevented if contraception was used to space pregnancies.

Maternal and Newborn Health: Births with care that works

Family planning, abortion and post abortion care:

There are an estimated 303,000 maternal deaths each year, almost all in LMICs, and almost all avoidable. These deaths however are just the tip of an iceberg, with many more women who survive having complications during childbirth, but then suffer long-term disabilities. Increasing attention is being given to maternal morbidity and conditions such as postpartum depression, which affects a substantial number of women worldwide.

Pre-conception and antenatal care:

A woman can go through the entire nine months of pregnancy with a live baby that then dies during labour. A stillbirth has a profound impact on the woman and her family. Yet such deaths are rarely counted, which means stillbirths remain neglected in policy terms. Of the 1.9 million stillbirths annually, most result from preventable conditions such as maternal infections, non-communicable diseases, and obstetric complications.

Better quality of care around the time of birth:

Each year 135 million babies enter the world, yet their chances of surviving and thriving depend very much on where they happen to be born. Almost half (2.3 million) of all under-five deaths now occur in the first month of life, a disease burden that is more than 40 times that of child HIV. Beyond survival, neonatal conditions also have important implications for child development, as foetal health is key to improving long-term health throughout the life course, reducing stunting, and preventing non-communicable diseases.

Targets in this Generation



SSDG 3.7: By 2030, ensure universal access to sexual & reproductive health-care services, including for family planning, information & education, & the integration of reproductive health into national strategies & programmes

SDG 3.8: Universal health coverage to be achieved by 2030

SDG 5: Achieve gender equality, empower all women, end gender-based violence

Burden Now



4.5 million

deaths around the time of birth each year

1.9 million

stillbirths (>28 weeks pregnancy)

2.3 million

neonatal deaths (<28 days after birth)

0.3 million

maternal deaths

80% of these deaths occur in Africa and South Asia

The top killers of women & their babies are:

- Intrapartum complications
- Non-communicable diseases
- Infections

→ Foetal health is key to improving long term health throughout the life course, reducing stunting, & preventing non-communicable diseases

Survive

Causes of maternal death:

Preventing maternal deaths from bleeding is a high priority because haemorrhage accounts for almost one-fifth of global maternal mortality. We are working with King's College London and others on the MRC-funded Pregnancy Care Integrating Translational Science Everywhere (PRECISE) network, to better understand risks and outcomes for pregnant women, including through bio-data. The follow-on study PRECISE-DYAD is linking maternal and infant health trajectories in sub-Saharan Africa. We have also seen work linking with African Demographic and Health Surveillance Sites to [Global Age Patterns of Under-Five Mortality](#) and another project developed a holistic framework for research on maternal, late foetal, and newborn survival and health. The WOMAN trial showed that early administration of tranexamic acid reduces death from bleeding in trauma and postpartum haemorrhage. Through advocacy on the importance of tranexamic acid for treatment of postpartum haemorrhage and further research through WOMAN-2, we continue to focus on global maternal mortality.

Infections in pregnancy:

Group B streptococcus (GBS) infection has been recognised for over 40 years as an important cause of neonatal deaths, especially in the United States of America (USA). Research conducted by LSHTM found that 21.7 million women carry GBS during pregnancy and estimated that more than 100,000 stillbirths and neonatal deaths worldwide could be prevented by the development of a vaccine against GBS, and that GBS is an important and under-recognised cause of maternal sepsis especially in the postnatal period. The MARCH Centre team is working with WHO and other agencies to develop a value proposition for GBS maternal vaccination. Research is being done on other infections also. A former MARCH MSc student, now on the LSHTM-Nagasaki joint PhD

programme, is researching antenatal care interventions aimed at reducing the dual-burden of malaria and curable STIs/reproductive tract infections in pregnancy in sub-Saharan Africa. Furthermore, we are responding to emerging infection threats such as Zika and COVID-19. For the latter, the biggest threat to mothers and children from COVID-19 was disruption of health services and reduced health services access. LSHTM researchers, including MARCH researchers, worked with WHO to document disruptions to maternal, newborn, and child health services around the globe and examine opportunities to protect these services.

Stillbirths and newborn survival:

Separate randomised trials in the Gambia and Uganda studied the effect of early kangaroo mother care on survival amongst preterm and low birth weight babies. Each Baby Counts is a project with the Royal College of Obstetricians and Gynaecologists in the UK, seeking to understand to the causes of intrapartum-related deaths and disability. We also provide technical support and leadership to support the WHO/UNICEF Every Newborn Action Plan which supports over 70 countries to improve their maternal and newborn services.

The [Every Newborn Action Plan](#) is a multi-partner initiative led by WHO and UNICEF in response to a World Health Assembly (WHA) resolution and targets set by all countries to end preventable newborn deaths and stillbirths. Continuing the key role MARCH researchers had in shaping the plan and targets, we are actively involved in a number of studies and leading work on improved metrics for routine use in countries. There is an urgent need to support the implementation and scale up of interventions, which we know are effective for the prevention of neonatal deaths.

LSHTM research includes the Operationalising Kangaroo Mother Care Before Stabilisation Amongst

Low Birth Weight Neonates in Africa (OMWaNA) trial of early kangaroo mother care for hospitalised neonates weighing less than 2000g in the Gambia, the Pre-delivery Administration of Azithromycin to Prevent Neonatal Sepsis & Death (PregANZI-2) trial of azithromycin during labour to reduce neonatal deaths in Burkina Faso and the Gambia, and effectiveness evaluations of community interventions. In India, the National and State Health Missions and the civil society organisation Ekjut are collaborating with LSHTM to assess the effects of scaling up participatory learning and action with over 36,000 women's groups to improve maternal and newborn health across Jharkhand.

Newborn Essential Solutions and Technologies (NEST) 360 seeks to address the critical lack of life-saving neonatal care technologies in sub-Saharan Africa by working with national healthcare providers and educational institutions to optimise a package of affordable technologies for quality, comprehensive newborn care, generate demand for these technologies and educating clinicians and biomedical innovators as the next generation of leaders in systems change for neonatal care. The NEST interventions will first be scaled up in Malawi before assessing cost-effectiveness in southern Tanzania and Nigeria.

Quality of maternal and newborn healthcare:

In Tanzania, researchers are studying effects of a quality management approach linking communities and health facilities, and in Ethiopia with Informed Decisions for Actions in Maternal and Newborn Health (IDEAS), researchers are evaluating the quality of community-based newborn care within the context of a national initiative aimed at improving newborn survival. The Improving Quality and Use of Newborn Indicators (IMPULSE) is a two-phase project to describe improve the quality and use



of facility-level newborn indicators in sub-Saharan African countries to improve quality of care. We work with the UK Royal College of Obstetricians and Gynaecologists on the [National Maternity and Perinatal Clinical](#)

[Audit](#) as a framework for continuous monitoring and quality improvement. A UK multi-centre quality improvement project is evaluating a bundle of interventions to reduce obstetric injury.

Thrive

Beyond newborn survival

The ABAaNa study is following a cohort of infants affected by neonatal encephalopathy in Uganda, to examine both mortality and morbidity after brain injury around the time of birth. We also have worked to develop intervention programmes to support infants impacted by Zika. Retinopathy of prematurity is an example of a very preventable disability that could be prevented with improved quality of care and follow-up of small and sick newborns. There are also many examples of child development studies that start from birth, as highlighted later in the report.

Maternal and child nutrition:

[Healthy Mums Healthy Babies: Multiple Micronutrient Supplementation \(MMS\) in Ethiopia](#) is studying the impact and feasibility of replacing iron and folic acid with multiple micronutrient supplementation in Ethiopia.

Measurement improvement:

The Every Newborn – BIRTH (EN–BIRTH) funded by the Children's Investment Fund Foundation was a multi-country study that observed 20,000 births in Tanzania, Bangladesh and Nepal, to compare what actually happens with what is recorded in delivery registers, and with what women recall. This will enable validation of metrics that may be possible to use in routine systems for oxytocin administration, resuscitation, kangaroo mother care, and other high-impact interventions. To advance measurement of care for small and sick newborns, in EN–BIRTH 2 we are working with WHO and partners to define content of care, assess what is already measured through health facility assessments, and consider what could be collected in Health Management Information Systems. [EN-INDEPTH](#) works with colleagues at Makerere University School of Public Health to provide evidence to improve population-based survey

data regarding pregnancy outcomes. In addition, the [Vulnerable Newborn Measurement Collaboration](#) is a multi-country partnership generating estimates of prevalence, mortality risk, and population attributable risk to inform improved data quality and use in all regions of the world.

Mental health:

[Generation Malawi](#) is building research capacity through coordinated appointment of new researchers and research assistants, a programme of education and dissemination, and the development of a population mental health dataset focussed on an area of great unmet need – the mental health of mothers and their children. We are also responding to emerging threats to mental health, with the British Academy, and addressing infant feeding and maternal mental health across the post-partum period through creation of an app to support new mothers in the COVID-19 era.

Transform

Sexual and reproductive health:

LSHTM has a long tradition of conducting high-quality research on sexual and reproductive health. Researchers are exploring the effect of mobile phone interventions such as text message information and reminders on uptake and continuation of contraception. We are also conducting analyses of unmet need for family planning in relation to HIV status and use of HIV care and treatment services. The EVA-Prevention of Maternal Death from Unwanted Pregnancy (EVA-PMDUP) project, a multi-country evaluation, identified and assessed strategies of international non-governmental organisations (NGOs) to transform domestic policy environments to improve women's access to family planning and safe abortion.

Violence against women and girls:

LSHTM has one of the world's leading research groups on women's health and violence. In collaboration with other researchers, they have produced landmark research published in the Lancet Series on Violence Against Women and Girls and in the WHO's Global and Regional Estimates of Violence Against Women. Ongoing projects include a qualitative investigation of integrating mHealth (mobile health) interventions into perinatal home visiting programmes to reduce intimate partner violence in the USA, and a cluster randomised trial of an intervention designed to reduce violence and increase consistent condom use amongst female sex workers in India.

Colleagues at our institutional partner, the National University of Singapore, are evaluating the WeChat programme: a 24-hour chatline intervention for linking female entertainment workers in Cambodia's capital city, Phnom Penh, to gender-based violence services. They have also conducted a randomised control trial, Mobile Link, to develop and evaluate a community-based intervention using mobile technology to reach female entertainment workers, in Phnom Penh and three provinces, with health information and link them to HIV, sexual and reproductive health, and gender-based violence services.

Empowerment of women and girls:

The Umeed-e-Nau project is supporting women and girls in Pakistan to scale up empowerment and care strategies to address health and survival. The Healthy Wetlands for the Cranes and People of Uganda project in Rukiga, Uganda, is expanding the evidence base on how to integrate conservation, sustainable livelihoods and SRH programmes, to improve access to services and contributing to empowering women through its holistic approach.

Targets in this Generation

B

SDG 3.1: By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births

SDG 3.2 & Global Strategy: By 2030 all countries to reduce neonatal mortality & stillbirth rates to at least as low as 12 per 1,000 live births

SDG 3.8: Universal health coverage to be achieved by 2030



What is our next generation of research?



Research Gaps

B

- 1 Family planning, abortion, and post-abortion care
- 2 Pre-conception and antenatal care
- 3 Quality of care around the time of birth
- 4 Health system and programme measurement
- 5 Climate and heat

Family planning, abortion and post abortion care:

We will expand our work on family planning, abortion, and post-abortion care to research new family planning methods that are longer-lasting and with fewer side effects, as well as to understand and optimise medical abortion methods and safety standards. We will also continue to research innovative delivery methods for family planning services that overcome socio-cultural and legal barriers such as services for unmarried women and adolescents.

Pre-conception and antenatal care:

We will continue to research models of preconception care that are cost-effective and feasible in LMICs. We will expand our research on innovation for non-communicable diseases and infections, including diagnostics and maternal immunisation. We will also expand work to test new approaches to antenatal care, including the WHO Antenatal Care SMART Guidelines, and innovative service delivery models, such as group antenatal care and digital health approaches.

Better quality of care around the time of birth:

We will continue to advance innovations (diagnostics and devices) to improve intrapartum and newborn care including comprehensive care for small and sick newborns. We will also expand work on innovative service delivery models, human resources and family-centred care as well as evaluating quality improvement programmes in health facilities.

Health system and programme measurement:

We will continue to research the financing and organisation of sexual and reproductive health, and maternal and newborn care services, with a focus on both public and private sector providers. We will pursue evaluation of innovative models to expand access to sexual, reproductive, maternal and child health services through cross-sectoral partnerships including from the climate sector. We will also continue to focus on improved programme measurement, especially using routine facility-based data, including to track skilled attendance, coverage of high-impact interventions including care of small and sick newborns, referral and measurement of high quality and respectful care around the time of birth.

Climate and heat:

Building on the Climate, Heat and Maternal and Neonatal Health in Africa (CHAMNHA) project examining the links between climate-induced increases in heat on pregnancy and newborns, the HIGH Horizons project will further research this agenda, including indicators to monitor heat impacts in pregnancy and postpartum period, as well as early warning systems and adaptation and mitigation for women, health workers and health facilities. Colleagues are already researching the impact of maternal exposure to high ambient temperature, the physiological response to that stress and the impact that has on fetal health and wellbeing, focusing on pregnant subsistence farmers in West Africa.



Child health over the past three decades has been transformed. Dramatic improvements in many areas are most clearly manifest by reduced child mortality among those aged under 5 years.

In 1990, the baseline year for the Millennium Development Goals (MDGs), UNICEF/WHO data show 12.8 million deaths of children under 5 per year, equivalent to 1 in 11 children dying before their 5th birthday. In 2021, figures show 5 million deaths of children under 5 per year, with 1 in 26 children dying before the age of 5 – a significant reduction.

Despite these improvements, many challenges remain. There is major global inequity in a child's life chances based on where they are born. In 2021, the global child under 5 mortality rate was 38 deaths in every 1000. In Western Europe it was 4 in 1000, in South Asia it was 37 in 1000, and in sub-Saharan Africa it was 73 deaths in every 1000 – a stark difference.

Only seven years remain to achieve the health, nutrition, education, and numerous child-related Sustainable Development Goals (SDGs) targets. However, even before the COVID-19 pandemic and recent conflicts, we were far off targets. While 122 out of 195 countries had achieved their 2030 target for under 5 mortality by 2019, 53 were off track.

The top causes of child deaths globally are neonatal deaths and childhood infections, notably pneumonia, diarrhoeal disease, and malaria. Chronic diseases and congenital conditions are also major causes of death, and road traffic injuries are increasingly responsible, especially among older children.

Many deaths would be prevented if every woman and every child received already available, evidence-based interventions, especially in early infancy. Malnutrition in all its forms currently contributes to 45% of all deaths of children after the 1st month and before their 5th birthday. More than 1 in 5 children under five are stunted (too short for age). This reflects chronic undernutrition, often starting in-utero, with lifelong consequences including impaired physical and cognitive development.

Ensuring a healthy childhood is not just a short-term priority to reduce child deaths. It has lifelong benefits for adult health and disease. There is, for example, growing evidence that child malnutrition increases the risk of adult non-communicable disease including heart disease and diabetes. Child malnutrition also affects later-life neurodevelopment, academic achievement, cognition and behaviour. There are even possible long-term effects on mental health. Strong health systems and effective interventions are vital to help children reach their full developmental potential and ensure they do not enter adulthood with pre-existing risks and adversities.

MARCH members address the major health concerns facing children, taking an integrated approach to child health which considers the wellbeing of the whole child. We focus on asking high priority research questions that are most relevant to future policy and front-line programmes and excel at generating evidence from bench to bedside to systems and policies. Together, these provide fertile ground and the right environment for positive changes to develop. It is vital that research helps children thrive as well as survive, achieving their full physical, cognitive, and social potential.



Infectious diseases:

Research related to the survival of children from infections aims to examine the burden and root causes of infections, to develop and evaluate new methods for prevention and treatment of infection, and to evaluate interventions in low-, middle-, and high-income settings. LSHTM has extensive experience in researching new treatments for childhood infections including neglected tropical diseases such as schistosomiasis. This includes the 'Macrolides Oraux pour Réduire les Décès avec un Oeil sur la Résistance' (MORDOR) trial of mass administration of azithromycin to young children in Malawi and the Praziquantel in Preschool Children (PIP) trial, a randomised controlled trial aiming to find the right dose of the only available drug to treat schistosomiasis in preschool children in Uganda and the Philippines. Results of the PIP trial will inform WHO policies on schistosomiasis control.

The Febrile Illness Evaluation in a Broad Range of Endemicities (FIEBRE) study will determine the infectious cause of acute febrile illness in children in Mozambique, Malawi, Zimbabwe, Myanmar and Laos, and investigate new diagnostic tests to improve case management. Personalised Risk Assessment in Febrile Illness to Optimise Real-life Management (PERFORM) is a multi-centre study in both Europe and the Gambia aimed at developing and evaluating new biomarkers to differentiate between bacterial and viral infections. LSHTM researchers are involved in the development and evaluation of diagnostic test for syphilis and neglected tropical diseases and the electronic clinical decisions support tools based on integrated management of childhood illness.

LSHTM has led the development and evaluation of tools for preventing major childhood infections including vaccines, insecticide treated nets, and drugs for prophylaxis. The Vaccine Centre and the Malaria Centre at LSHTM act as the focal areas for research on vaccines and malaria. Examples include large trials of new generation pyrethroid-piperonyl butoxide nets to prevent malaria in Tanzania, South Africa, and Uganda; vaccine trials such as the Pneumovac trials in the Gambia; and cluster randomised controlled trials of seasonal malaria chemoprophylaxis in West Africa.

Targets in this Generation



SDG 3.2: By 2030, end preventable deaths of newborns & children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births & under-5 mortality to at least as low as 25 per 1,000 live births

Global Nutrition Plan: By 2025 to have a 40% reduction in the number of children under-5 who are stunted, & 30% reduction in low birth weight

SDG2: End hunger, achieve food security and improved nutrition, promote sustainable agriculture by 2030

SDG 3.8: Universal health coverage to be achieved by 2030

SDG4: Inclusive and equitable quality education for all by 2030

Burden Now



5 million

children die before their 5th birthday each year

Countries in Sub-Saharan Africa and southern Asia account for >80% of child deaths

>48 million

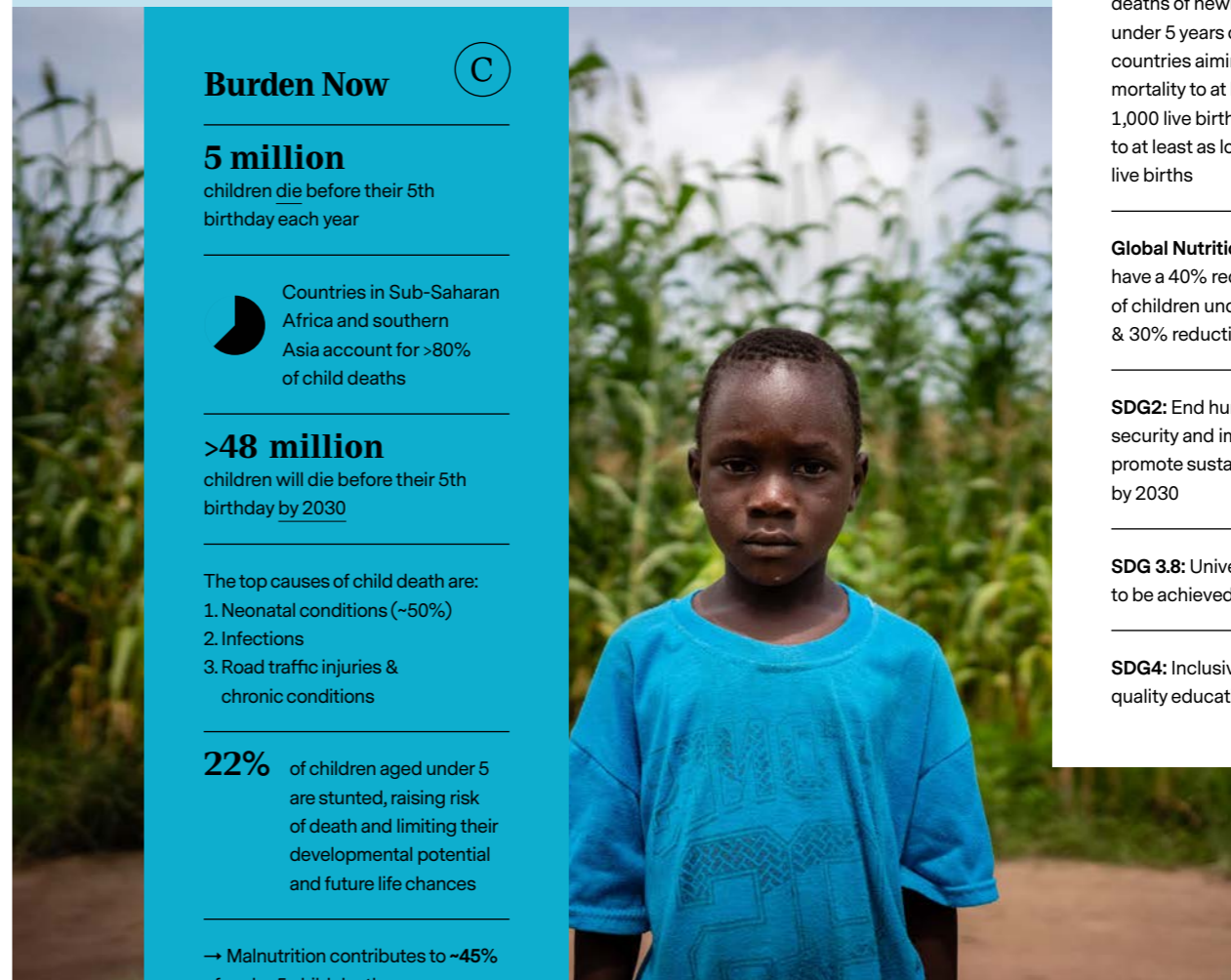
children will die before their 5th birthday by 2030

The top causes of child death are:

1. Neonatal conditions (~50%)
2. Infections
3. Road traffic injuries & chronic conditions

22% of children aged under 5 are stunted, raising risk of death and limiting their developmental potential and future life chances

→ Malnutrition contributes to ~45% of under 5 child deaths.



Thrive

Nutrition:

As highlighted in the [Global Nutrition Report](#), COVID-19, conflict, and the climate crisis are a deadly combination currently pushing millions more people into hunger worldwide. In 2021, 768 million people were living with hunger, up from 618 million in 2019. Children are the most vulnerable to hunger. Even pre-COVID, in 2020, 149 million children under 5 were stunted (too short for age), a marker of chronic malnutrition, and 45 million were wasted (too thin for height), a marker of acute malnutrition. There is also a growing 'double burden' of malnutrition (i.e. the coexistence of undernutrition and overnutrition), even in the world's poorest countries. Globally, 38.9 million children are overweight or obese. Many LSHTM researchers consider nutrition-related exposures and outcomes. We have a specialist LSHTM [Nutrition Group](#) which works on the major nutrition and food-related problems that affect human development and well-being. The [Innovative Methods and Metrics for Agriculture and Nutrition Actions \(IMMANA\)](#) project is a long-term programme which aims to improve nutrition and health by strengthening tools, capacity, and evidence in agriculture and food systems research. LSHTM co-chairs the [Management of Small and Nutritionally At-Risk Infants Under Six Months and Their Mothers \(MAMI\)](#) Global Network and coordinates several projects focused on malnutrition in young infants.

We also lead a [large randomised controlled trial in Ethiopia](#) in collaboration with Jimma University, GOAL Ethiopia, and the Emergency Nutrition Network (ENN). Lastly, the [Child Malnutrition and Adult NCD: Generating Evidence on Mechanistic Links to Inform Future Policy/Practice \(CHANGE\)](#) project works with partners in Jamaica, Ethiopia, and Malawi, and laboratory partners in Cambridge and Southampton, to better understand the links between child malnutrition and adult non-communicable diseases to inform future policy and practice.

HIV-exposed uninfected (HEU) children:

Scale-up of prevention of mother-to-child transmission of HIV has substantially reduced the number of infants infected with HIV. As a result, there are an estimated 15.9 million children who are HEU worldwide. Several LSHTM researchers are focusing on the health and development of children who are HEU. Studies in South Africa and Zambia are exploring the neurodevelopment of children who are HEU and are investigating the long-term outcomes of [maternal HIV exposure](#). HIV-exposed and infected children still need support. The [Child Health Intervention for Developmental Outcomes \(CHIDO\)](#) trial in Zimbabwe explored early childhood development, parenting, economic resilience, retention in HIV care, and care outcomes among HIV-exposed and infected infants aged 0-2 years.

Early childhood development (ECD):

MARCH hosts a [special interest group on ECD](#). LSHTM has numerous projects in this area. The Sustainable Program Incorporating Nutrition and Games ([SPRING](#)) trial is a recently completed seven-year research programme funded by the Wellcome Trust that brought together researchers from the UK, India, and Pakistan. Every Newborn – Simplified Measurement Integrating Longitudinal Neurodevelopment & Growth ([EN-SMILING](#)) extends other EN-BIRTH research to include metrics for child development and promotes early identification of adverse developmental outcomes. Building on this, Every Newborn – Reach up Early Education intervention for All Children ([EN-REACH](#)) is a randomised trial of 150 clusters in three countries evaluating a pre-school readiness package. The Nairobi Early Childcare in Slums ([NECS](#)) study builds an understanding of ECD in Nairobi slums with a particular focus on the informal childcare sector.

Disability:

We work closely with the LSHTM [International Centre for Evidence in Disability](#) whose mission is to provide evidence to improve the health and wellbeing of people with disabilities globally.

Reproductive development:

LSHTM hosts the first [Evolutionary Demography Group](#) in the UK, with academics exploring the impact of family and early stress on reproductive development in both girls and boys, and exploring the impact of extended family members on child health and mortality.

neonatal cause of death, low birth weight, congenital abnormalities (e.g. neural tube defects), and infections (e.g. group B streptococcal disease).

Transform

Data to drive health system transformation:

The Every Newborn Action Plan (ENAP) Measurement Improvement Roadmap was led by LSHTM with WHO. As part of this we coordinate

EN-BIRTH and EN-INDEPTH, discussed in the [Birth](#) section. LSHTM researchers have both led and contributed to numerous publications and reports describing global neonatal epidemiology. This includes work on

What is our next generation of research?

Primary care and nutrition:

We will continue to work on a range of child-related conditions and are especially focused on [Getting Research into Policy and Practice, at-Scale and Sustainably \(GRIPPS\)](#). This involves considering the effectiveness and integration of various child health programmes at community and primary healthcare levels. Nutrition will continue to be a key theme. This powerfully illustrates our guiding principle that combinations of interventions are needed for optimal impact, e.g. nutrition-sensitive interventions (those which directly impact on nutrition, such as feeding and breastfeeding support) and nutrition-specific interventions (those which play a more indirect role, such as improved agricultural practices). Synergy between different interventions and programmes is thus achieved.

Vaccines and infectious disease:

We collaborate with LSHTM's [Vaccine Centre](#) and related groups exploring new vaccines and diagnostics for the prevention and management of neonatal and childhood infections. We will build on our strengths in basic science and clinical and operational research, and strengthen connections between them.

Climate change:

Our focus will continue to be on researching innovative diagnostics and devices for the hospital care of ill children and neonates. We will expand our work on preventing and addressing the growing problem of antibiotic resistance by researching new antimicrobials and antimalarial medication and focusing on innovative approaches to human resources and service delivery.

Innovative, participatory research methodologies:

We will continue to research innovative programme and research methods including expanding on cross-cutting disciplines such as clinical pharmacology and pharmacokinetic/pharmacodynamic driven clinical trials. Other specific areas of development include quality of care in health facilities with a focus on development and validation of new technologies, such as diagnostic tests and mobile health technologies, as well as implementation research aimed at evaluating packages of care, especially in the first 1000 days of life, and the information and intervention gap for children aged 5-10.

Commercial determinants of health (CDH):

There is growing recognition of the profound adverse effects of unhealthy food and commodity consumption. LSHTM researchers have recently launched a short course on [Conducting Research on CDH](#). Despite CDH being hugely complex and presenting many challenges, work to tackle these is a future MARCH priority as well as a key future global health priority.

Research Gaps



- 1 Primary care and nutrition
- 2 Vaccine and infectious disease
- 3 Hospital care of small and sick newborns and ill children
- 4 Innovative methods and optimising treatment in children
- 5 Commercial determinants of health



MARCH multi-country, multidisciplinary research

A B C

LINEA
Wellspring
Philanthropic
Fund, Oak
Foundation
(2015-2025)
Global

LINEA is an international, multi-pronged project exploring how social norm theory can be used to reduce the sexual exploitation of children and adolescents globally.

www.lshtm.ac.uk/research/centres-projects-groups/linea

B C

PRECISE-DYAD
Wellcome Trust
(2019-2023)
2 countries involved

The PRECISE Network conducts a shared research project in Africa that investigates important complications of pregnancy. PRECISE-DYAD follows a cohort of women and children from the Gambia and Kenya to investigate the mechanisms that underpin optimal maternal and child health trajectories following either normal or complicated pregnancy.

precisenetwork.org/precise-dyad

B

NEST360
Gates Foundation
ELMA Foundation, Children's Investment Fund
Foundation, MacArthur Foundation (2019-2029)
4 countries involved

NEST360 supports African governments to implement a package of care that includes affordable technologies, training for clinicians and biomedical technicians, and locally-owned data to deliver high quality small and sick newborn care, in Kenya, Malawi, Nigeria, and Tanzania.

nest360.org

A

Y-check Phase 2
Fondation Botnar
(2022-2024)
3 countries involved

This study is investigating the effectiveness and cost-effectiveness of adolescent health and well-being check-ups in cities in Ghana, Tanzania, and Zimbabwe.

www.thruzim.org/adolescenthealth

B

WOMAN-2 trial
Wellcome Trust
(2018-2023)
4 countries involved

The WOMAN-2 trial is testing whether tranexamic acid can prevent postpartum bleeding in women with anaemia. This trial has 11,489 participants across Pakistan, Nigeria, Tanzania, and Zambia.

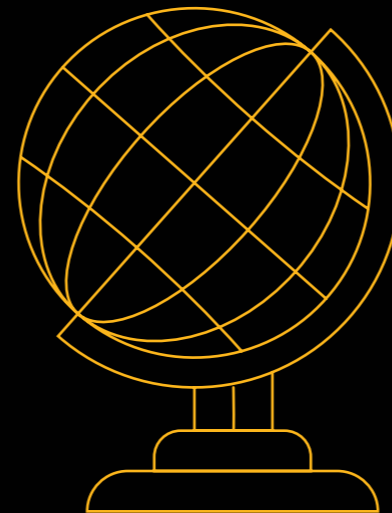
woman2.lshtm.ac.uk

A

Friendship Bench
Wellcome Trust, Mackenzie-Scott Fund,
Medical Research Council, National
Institute for Health and Care Research
(2017-2025)
8 countries involved

The Friendship Bench provides sustainable community-based mental health interventions that are evidence-based, accessible, and scalable. Community-health workers are trained to provide basic Cognitive Behavioural Therapy with an emphasis on Problem Solving Therapy, activity scheduling, and peer led group support. Founded in Zimbabwe, Friendship Bench has since trained partners in the USA, Canada, Vietnam, Jordan, Tanzania, Kenya, and Malawi.

www.friendshipbenchzimbabwe.org



B C

HIGH Horizons
European Union
(2022-2026)
5 countries involved

The HIGH Horizons project centres on pregnant and postpartum women, infants, and health workers – groups heavily affected by climate change. This project monitors health impacts of extreme heat, tests a personalised Early Warning System (EWS), and implements integrated adaptation-mitigation actions in health facilities. Analysis of data from Italy, Sweden, Kenya, South Africa, and Zimbabwe informs testing and selection of global, EU, and national indicators.

www.high-horizons.eu

B C

Baby Ubuntu
UK Health Security
Agency
(2015-2022)
3 countries involved

Baby Ubuntu is a programme of early care and support for young children (0-3 years) with developmental disabilities and their caregivers. Piloted in Uganda, Baby Ubuntu has since been implemented in Rwanda and has also been adapted for use in Afghanistan.

www.ubuntu-hub.org

C

Action Against Stunting
Engineering & Physical Sciences
Research Council
(2019-2024)
3 countries involved

Action Against Stunting aims to transform research on child stunting by taking the 'whole child' approach, looking at every aspect of early development and understanding where interventions can be made to transform the lives of some of the most vulnerable children in India, Indonesia, and Senegal.

actionagainststunting.org

A B C

WhatWorks
International Rescue Committee
(2014-2019)
14 countries involved

This project investigates what works to prevent violence against women and girls in conflict and humanitarian settings across Africa and Asia.

www.whatworks.co.za

A B C

Vaccine Confidence Project
European Commission, European
Federation of Pharmaceutical Industries
and Associations, GlaxoSmithKline,
Innovative Medicines Initiative, Johnson
& Johnson, MacArthur Foundation,
Merck, S&P Global Foundation, UNICEF,
University College London
Global

The project monitors public confidence in immunisation programmes. This includes a global study of public sentiments and emotions around COVID-19.

www.vaccineconfidence.org

A C

**Children, Cities,
and Climate**
Fondation Botnar
(2021-2022)
Global

Children, Cities and Climate aims to understand and communicate young people's views of their cities and assess the public health co-benefits of improving urban environments.

www.lshtm.ac.uk/research/centres-projects-groups/children-cities-and-climate

Integrating with health conditions and sectors that affect health: MARCH synergies across LSHTM Centres



Epidemics, Pandemics and Infections

Three WHO-declared public health emergencies of international concern – the 2014-16 Ebola pandemic in West Africa and later in DRC, the Zika epidemic in the Americas 2016, and COVID-19 2020-21 – had serious regional and global impacts. Ebola led to significant increases in maternal and neonatal mortality. Zika virus resulted in increased microcephaly in newborns and Guillain-Barré syndrome in adults. COVID-19 was associated with increased maternal mortality. Beyond direct effects, Ebola and COVID-19 lockdowns and strain on health systems reduced access to reproductive, maternal, newborn, child, and adolescent health services and affected women's reproductive decision-making. While these caught the headlines, endemic infectious diseases (HIV, malaria, tuberculosis, and Group B Streptococcus), vaccine-preventable disease (measles, polio, and HPV), and antimicrobial resistance remain severe across the globe.

Emerging Infections:

LSHTM researchers engaged in research and programmes to address Zika, Ebola and COVID-19. A cohort of pregnant women with Zika infection and Congenital Zika Syndrome (CZS) were followed to examine Zika infection impacts. For COVID-19, LSHTM statisticians produced the first estimates showing that by not continuing childhood immunisations during the pandemic, deaths from vaccine-preventable diseases would exceed those caused by COVID-19 transmitted during vaccine contacts. This finding led to restarting global vaccine programmes. LSHTM also supported WHO to monitor 'COVID-Collateral' impacts on health services for women and children.

HIV, TB, & Malaria:

LSHTM continues to lead on HIV prevention and treatment in sub-Saharan Africa, particularly in adolescents as highlighted in the [Adolescent section](#). Tuberculosis is difficult to diagnose in children contributing to ongoing morbidity and mortality. LSHTM is working to develop biomarkers for childhood TB diagnostics funded by U.S. National Institutes of Health. A randomised controlled trial assesses the effects of metronidazole plus intermittent preventive treatment of malaria in pregnancy on birth outcomes in Zambia. As noted in the [Child section](#), the Vaccine and Malaria Centres are leading the way on malaria vaccines and treatment and prevention of childhood malaria.

Preventing nosocomial infections among vulnerable newborns requires effective Infection Prevention and Control (IPC) strategies. The role of cleaning and cleaners in reducing risks and maintaining a clean safe environment has until recently been neglected. The CLEAN Study seeks to reposition cleaning within global and national initiatives related to Water, Sanitation and Hygiene, IPC, and Antimicrobial Resistance (AMR). MARCH also collaborates with the AMR Centre on preventing resistance in children.

Violence through the lifecycle

Gender-based violence occurs throughout the lifecycle, often starting before birth, with sex-selective abortions, cases of female infanticide, child abuse, maltreatment, and female genital cutting during childhood. In adolescence and adulthood, as well as intimate partner violence and non-partner sexual violence, other forms of gender-based violence occur, such as forced marriage, trafficking for sexual exploitation, dowry and honour killings, sexual harassment, and psychological abuse.



The Gender Violence & Health Centre (GVHC) at LSHTM has world-leading expertise on violence across the lifecycle including against women, children, and adolescents, labour exploitation and human trafficking, and violence. There is also an established Child Protection Research Group that brings together researchers at LSHTM working in this area. MARCH works closely with the GVHC and Child Protection Research Group. Each year, we collaborate on engagement events to mark 16 Days of Activism Against Gender-Based Violence, a global campaign dedicated to the prevention and elimination of violence against women and girls.

Adolescents and young people:

GVHC academics are leading the Context of Violence in Adolescents (CoVAC) study examining how experience of violence in adolescence can lead to increased risk of intimate partner violence, poor mental health, and other poor health outcomes in early adulthood, through four points of data collection.

Cyberviolence is a relatively new area of study and little research has been conducted in LMICs. Online and information and communication technology (ICT) violence, often linked with offline violence, disproportionately affects women, girls, and sexual and gender minorities. GVHC colleagues are exploring the prevalence and characteristics of electronically facilitated violence and its links with in-person gender-based violence among young people in Mwanza, Tanzania.

Births:

Healthcare Responding to Violence and Abuse (HERA) aims to strengthen the health system response to violence against women, specifically in sexual and reproductive healthcare settings, in Brazil, Nepal, Sri Lanka and occupied Palestinian Territories.

Children:

The GVHC is developing several interventions that address violence among children, adolescents, and women. The Learning Initiative on Norms, Exploitation and Abuse (LINEA) project aims to inform primary prevention among adolescent girls in LMICs by investigating the social norms and other social factors contributing to, and protecting against, child sexual exploitation worldwide.

Colleagues in the GVHC are involved in a global evidence review of effective interventions that prevent and/or respond to intimate partner violence against women and child maltreatment. Alongside this they are conducting a situational analysis on the intersections between violence against women and violence against children in the UNICEF Middle East and North Africa Region. The situational analysis aims to review policy evidence and identify challenges and opportunities for collaboration and coordination across existing policies and programmes that straddle both violence against children and violence against women with a focus on service level model.

Education

Education influences health throughout the life course both by providing individuals with assets and qualifications to lead productive and healthy lives and by ensuring children and young people develop knowledge, skills, norms and social support to make healthy decisions and avoid behaviours that harm health.



School-based health and nutrition programming present benefits for both health and education sectors. School-age (5-19 years of age) encompasses important periods of biological development and social change, during which many lifelong health behaviours are formed and gender norms are solidified, with impacts throughout the life course and into the next generation. Schools are an ideal platform for service delivery as the only setting reaching the majority of children and adolescents on a near daily basis, reducing implementation costs, and can be sustained by incorporating health and nutrition lessons and financing within national education sector plans.

Current research through the life course

The NIHR-funded Positive Choices trial is evaluating effectiveness of a whole-school intervention to promote sexual health in 50 English secondary schools. The intervention involves classroom relationships and sex education, student-led decision-making and campaigns, and increasing access to sexual health services. The Learning Together Mental Health intervention adapts an existing whole-school intervention to reduce bullying to increase its focus on mental health. Schools collect data on student mental health. Staff and students review this information and use it to choose from a menu of evidence-based practices to promote mental health. This study assesses its feasibility in four English secondary schools prior to a phase III effectiveness trial.

LSHTM hosts the Secretariat for the [Research Consortium for School Health and Nutrition](#), a research initiative of the School Meals Coalition, established at the request of 70+ member states to provide policymakers with access to independent, robust, compelling, and actionable evidence on school health and nutrition. The Research Consortium works through a community of practice model to fill mission-critical gaps in evidence, including (i) identifying school-based health interventions with the strongest evidence; (ii) determining value-for-money of school health interventions and their impact on education outcomes; (iii) documenting good practices from national school meal programmes across high- and low-income countries; and (iv) achieving consensus on nutrition indicators for school-age children and adolescents. The Consortium and University of Ottawa are leading the first [Cochrane Review](#) on school feeding programmes for improving physical and psychological health of school children living in socioeconomically disadvantaged circumstances.

Conflict and Humanitarian Crises

Recent OCHA data highlights that in 2022, 274 million people globally require humanitarian assistance. This represents a 250% increase from the number of people requiring assistance in 2015. The number of people requiring assistance is greatest in countries like Afghanistan, Democratic Republic of Congo, Ethiopia, Yemen, Sudan, and Syria – many of which have been affected by protracted conflict.

Humanitarian crises have long-lasting impacts. Whether crises result from conflict, natural disasters, or disease outbreaks, the consequences for health are enormous. Health systems face increased pressure to respond to need during crises and are often unable to cope with the demand for essential health services. Across the lifecycle, girls and women in particular face barriers to accessing healthcare, from limited information on sexual and reproductive healthcare, to disruptions in care during pregnancy and delivery, and lack of access to confidential survivor-centred support services after experiencing gender-based violence. Gender-based violence is often an everyday reality – not just during crises, but before and after crises – requiring context-specific prevention and response strategies.

The Health in Humanitarian Crises Centre (HHCC) at LSHTM works to advance health and health equity in crises-affected countries through research, education, and translation of knowledge into policy and practice. This includes research on the health of mothers, newborns, children, and adolescents during crises.

They are increasingly engaged in thinking about health equity through a decolonial lens, reflecting on research practices and seeking to address power hierarchies often present in humanitarian and global health work. MARCH works closely with colleagues in the HHCC and regularly collaborate on events highlighting research on women, children, and adolescent health in crises.

Colleagues from HHCC are part of the Bridging Research and Action in Conflict Settings for the Health of Women and Children (BRANCH) consortium's steering committee. BRANCH aims to improve evidence and guidance for effective action on women's and children's health and nutrition in conflict settings. Multiple funding initiatives now explicitly support rigorous ethical testing of strategies for delivering child focused interventions in conflict settings and the consortium aims to consolidate and interpret research findings in relation to the whole body of evidence.



Climate and Planetary Health

At the end of 2022, two Conference of Party meetings were held: the United Nations Climate Change Conference (COP27) and the United Nations Biodiversity Conference (COP15). These global meetings brought governments together to agree on goals for protecting our planet and its people. Small steps have been made in the Intergovernmental Panel on Climate Change's (IPCC) 5th Assessment Report (2014) and the 6th Assessment Report (published 2022), recognising the impacts of climate change on women and girls. The newly adopted Global Biodiversity Framework and related targets agreed at COP15 also contain significant references to gender equality, human rights, gender-responsive action, and the importance of mobilising multiple sectors. These provide important entry points for promoting work on the significant impacts of climate change and biodiversity loss on the health of women, children, and adolescents.

In vulnerable communities, women and girls are often the hardest hit by these threats. Given the broad disruption to health systems and services deriving from increased frequency and intensity of climate events, they can face disruption to sexual and reproductive health services; an increased risk of gender-based violence; and are forced to leave education early during disasters or displacement due to environmental pressures. The areas of the world with the highest levels of unmet need for family planning and broader SRHR overlap with the areas experiencing the most intense and harrowing effects of climate change. Often these are also the areas of the world who have contributed least to the climate crisis.

Children and young people in urban areas are among those worst affected, with air pollution, food insecurity, and water scarcity in urban environments having significant negative consequences on their health. Children, Cities and Climate is a project led by MARCH and the Centre on Climate Change and Planetary Health (CCCPH) members that aims to address three interconnected challenges: tackling the climate crisis; leveraging the central role of cities in reducing global greenhouse gas emissions and improving child and adolescent health; and producing and communicating new evidence on the public health co-benefits of reducing emissions for children and young people. The Medical Research Council Unit The Gambia at LSHTM, in collaboration with the Ministry of Basic and Secondary Education, held a 2-day Climate Change Solutions Festival in 2021. Partners from 11 senior secondary schools and 10 NGOs participated in the activities, with over 600 students in attendance. The goal was to build interest on climate-related issues among adolescents and youth and inspire community action to mitigate against the impact of climate change in the Gambia. MARCH and CCCPH are also both members of Cities for Children, an interdisciplinary Global Alliance of over 25 organisations working together to ensure that child rights are firmly embedded in the urban agenda. Cities for Children, an interdisciplinary Global Alliance of over 25 organisations working together to ensure that child rights are firmly embedded in the urban agenda.



Implications for MARCH future research

Some studies cover the whole lifecycle or link key areas such as sexual and reproductive health across the adolescent and birth themes. Implications that span our A, B, and C themes include:

Maximise interdisciplinary research around the lifecycle, beyond survival



Beyond survival: mapping MARCH-related research by our Centre-related themes, and according to Survive, Thrive and Transform (in line with the Global Strategy), we have been astounded by the breadth and depth of work and by the sheer number of LSHTM studies across our Centres that are related to MARCH topics. We can draw on huge numbers of experts across diverse research disciplines within MARCH and from across multiple LSHTM Centres. Together we will research novel longer term and inter-generational effects and potential interventions. We will undertake large-scale complex trials and evaluations of clinical and public health interventions. We will devise programme measurements with leading experts working on validation and feasibility studies to inform health management information systems.

Global linkages between high-, middle-, and low-income settings, with particular strength in Africa



We will continue to draw on our strengths bringing together low- and middle-income countries (LMICs) and high-income countries across the lifecycle, encouraging more north-south learning. We have particular strength in sub-Saharan Africa where the burden is highest for women's and children's health. We will strengthen existing links with the MRC units in the Gambia and Uganda and continue to partner and enable African leadership, including through our University of Ghana-LSHTM co-run MSc course.

Innovative research methods, with programme relevance



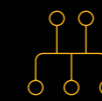
We will expand our expertise in developing metrics, generating global disease burden estimates, and conducting intervention research and policy and systems evaluations. Our research aims to develop and maintain positive working relationships with the groups we are working with and ensure participation in research. We will continue to develop innovative programme and research methods. These include quality of care in health facilities, the validation of new technologies such as diagnostic tests and mobile health technologies, the evaluation of packages of care for women, children, and adolescents, and the impact of public-private partnerships on health programmes.

Healthcare, systems and universal health coverage



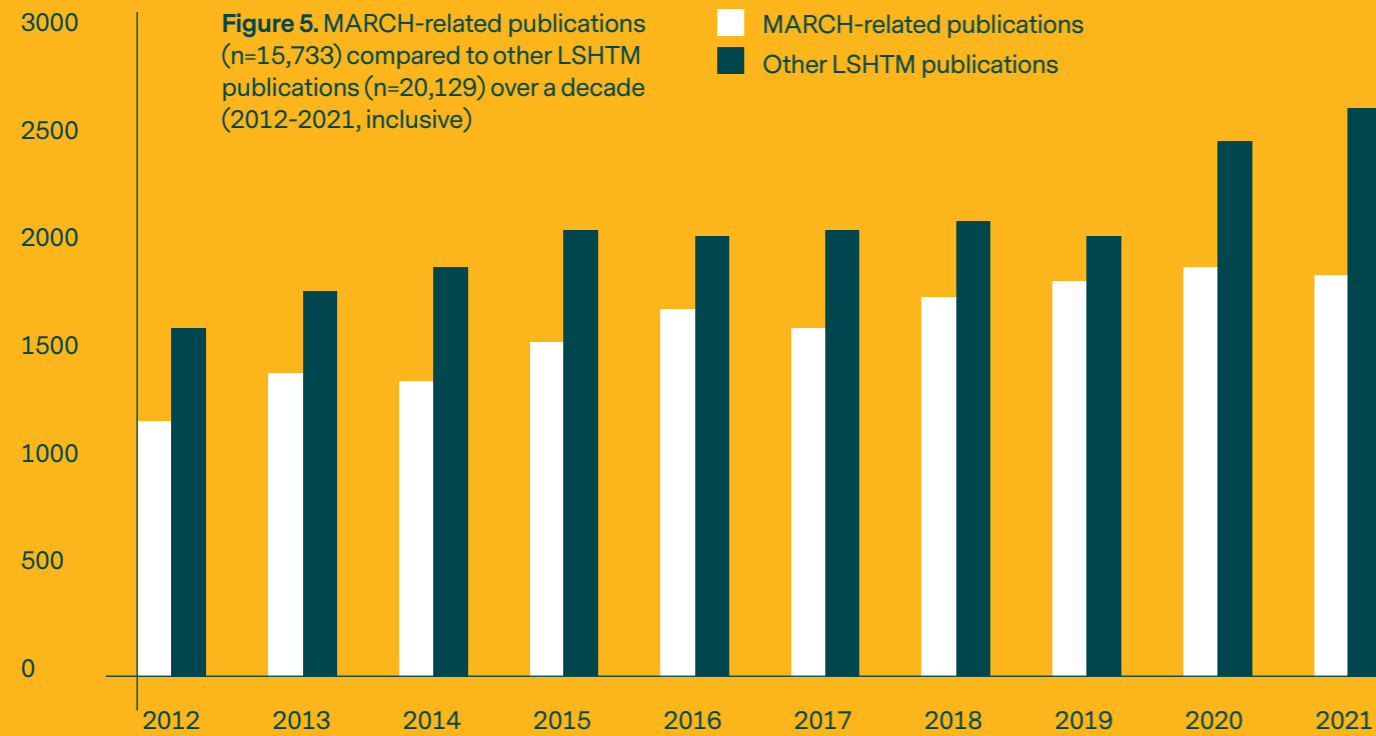
We will continue to innovate on diagnostics and devices for the care of ill children, mothers, and adolescents, and designing and evaluating healthcare systems that improve transitions between paediatric and adult healthcare. We will research models of care that are cost effective and feasible in LMICs taking account of growing issues such as climate change and antimicrobial resistance.

Intersectoral approach



Our research will focus on the 'whole' and will take into account many different influences on the lives of mothers, children, and adolescents. We will design and evaluate interventions that are multidimensional and cross-sectoral, including school-based interventions; integrated approaches to health care including with new partners from the climate/environmental protection and sustainable livelihoods fields; and integration of health programmes at community level.

High impact and influential research



Maternal, adolescent, reproductive, and child health topics are widely explored in LSHTM's research, with approximately 44% of LSHTM publications relating to MARCH topics. Furthermore, female first authorship and open access publishing are common for publications that relate to MARCH topics. Compared to LSHTM's overall average of 52% female first authorship (2012-2021 inclusive), an estimated 61% of publications related to MARCH topics have female first authors. In 2021, over 70% of publications related to MARCH topics were open access. Open access publishing is key to maximising impact of research. LSHTM research was ranked number one for impact in the UK Research Excellence Framework (REF) in 2021.

We have been involved in hundreds of studies around the world and our research has influenced United Nations policy and uptake on a range of issues. This is exemplified in our leadership of several influential Lancet Series and commissions including *The Lancet* Small Vulnerable Newborn Series (2023).

Other specific examples of policy impact include:

Adolescents and young people:

MARCH Centre research on preventing HIV in African adolescents has substantially influenced the HIV policies of international organisations such as UNICEF, UNESCO, and WHO, and HIV programmes in African countries. In particular, scale-up of voluntary medical male circumcision in adolescents and young people and findings on knowledge and attitude change through sexual health education have been widely implemented.

Births:

Postpartum haemorrhage is the main cause of maternal mortality worldwide causing a death every four minutes. MARCH Centre researchers led the WOMAN (World Maternal Antifibrinolytic) trial of 20,000 women, showing that mortality reduction of 31% if tranexamic acid (TXA) was given within three hours. These findings led to WHO policy change in less than one year. Our research on combined syphilis and HIV diagnostics is leading to policy change and investment to reduce the burden of congenital syphilis.

Children:

Research in 2017 (updated in 2022) coordinated by LSHTM with WHO provided the estimates of the burden of group B streptococcus (GBS), an infection carried by >20 million pregnant women annually. A maternal vaccine could prevent more than 100,000 stillbirths and child deaths worldwide. The research was featured in many mainstream news outlets, and in a WHO report and has helped inform the development of several vaccines.

Engaging with media and the public

Media

The MARCH Centre has a strong history of engaging with mainstream global media and our research has featured in many major news outlets including Reuters, Forbes, BBC, The Washington Post, The Guardian, The Canadian Press, Le Figaro, Al Jazeera, Sky News, TV5, Huffington Post, and The Hindu. It was estimated that our 2016 *Lancet* series on ending preventable stillbirths reached nearly one billion people via radio, TV, print, and the internet. Coverage spanned 53 countries and our research was reported on in over 1,100 unique pieces.

Public engagement

The MARCH Centre is committed to engaging members of the public in our research and we aim to create a dialogue with global communities through our public engagement activities to ensure our research is asking the right questions. Examples of our public engagement activities include:

Impact films

Video is a powerful communication tool. It is increasingly used by projects to summarise research or engage communities. The *Too Hot To Thrive* video was produced by Dr. Adelaide Lusambili and colleagues in Kenya as part of the CHAMNHA project and highlights how extreme heat exposure affects women during pregnancy and postpartum, and their newborns. The *ZVATINODA "WHAT WE WANT"* video was produced by a Youth Advisory Panel in Zimbabwe through the Zvatinoda project. The project aimed to improve the demand and uptake of sexual and reproductive health services by young people and the video provided a platform for the group to communicate their health needs and preferences and engage the project's target audience.

Art displays

The *Art of Health* competition is a crowdsourcing competition in Zimbabwe run by the Zimbabwe LSHTM Research Partnership. The initiative aims to engage young people with issues relating to health and wellbeing through the creative arts. The 'Art of Health Breathe In' competition was a new element of the initiative and the result of collaboration between the Art of Health and Children, Cities and Climate teams. The competition was divided into two main categories – music and design – and participants were asked to share entries on the theme 'The air we breathe in Zimbabwe's cities'. They were asked to express, through their chosen medium, how they feel about the cities they live in, the air they breathe, and the benefits that clean air could bring to health.



Next generation leadership

LSHTM provides a stimulating, world-class training environment for over 3500 postgraduate students from around 100 countries. We view the diversity of our students and research partners as a core strength and aspire to an ethos of mutual capacity building. Our vision is to nurture the next generation of research leaders for women’s, children’s, and adolescents’ health. To achieve this, MARCH members contribute to the entire portfolio of LSHTM’s education and engagement activities: short courses, distance learning modules, Master’s modules, research degrees, and Massive Open Online Courses (MOOC).

Master’s courses

MARCH members lead and contribute to many modules across more than 20 Master’s courses on offer at LSHTM. This content enables students to understand the health burden, critically examine interventions and analyse strategies for integrating them into large-scale programmes. It also enables them to understand the stories behind high impact studies, Lancet series, and the current global architecture and politics of global health.

Each year we appoint MSc Student Liaison Officers (SLOs) for our A, B, and C themes and, since 2021, a cross-cutting Climate theme. These roles are very popular, and more than 40 students apply each year. We also hold many interactive events for students, including opportunities to network with MARCH researchers and discuss summer project opportunities or learn about the realities of professional paths in global health on MARCH-related topics.



My MSc in Public Health at LSHTM was enriched by my experience as a Student Liaison Officer (SLO) in Climate theme at the MARCH Centre. I specialised in Environment and Health stream during my MSc, which allowed me to explore the numerous research projects in the nexus of climate change and maternal, adolescent and child health. The multi-disciplinary projects at the Centre also led me to shape my MSc dissertation to focus on environmental change influencing SRHR needs in rural Uganda. The SLO role is flexible and the team is very supportive with inspiring Theme Leaders. As a full-time student, it was very helpful to learn about these ongoing projects and kept me hopeful for the exciting opportunities I could have in research after graduation.

Tashfiha Nusrat Ruhi,
Climate Theme SLO, 2021-2022



Figure 6: Map of Africa showing countries participating in MSc Sexual & Reproductive Health Policy and Programming (2022-23)

Country

1. Benin
2. Burkina Faso
3. Cameroon
4. Chad
5. Ethiopia
6. Ghana
7. Kenya
8. Malawi
9. Niger
10. Rwanda
11. Sierra Leone
12. Sudan
13. Swaziland
14. Tanzania
15. Uganda
16. Zambia
17. Zimbabwe



Co-run MSc programme in sub-Saharan Africa: A model for decolonising teaching and capacity building for sexual and reproductive health and rights

As part of LSHTM’s goal of strengthening sexual and reproductive health and rights (SRHR) capacity in LMICs, we are partnering with the University of Ghana (UG) to deliver an online MSc Sexual & Reproductive Health Policy and Programming. This unique programme is jointly developed and co-delivered by faculty from both institutions.

MARCH members were instrumental in securing funding for this unique MSc which aims to strengthen capacity for SRHR in sub-Saharan Africa and MARCH faculty and partners have been actively engaged in the development and delivery of this Master’s. The programme is funded by an anonymous donor for an initial 3 years and is expected to support approximately 90 students from sub-Saharan Africa and other LMICs to obtain a Master’s degree in SRHR.

The online MSc in SRHR policy and programming is a unique model of decolonisation, which is mutually beneficial to all partners. Staff at UG and LSHTM benefit from working together closely, adopting teaching and learning tools and approaches from one another, and developing the joint programme to meet the needs of students.

Those enrolled on the programme benefit from a blend of expertise and experiences from both UK and Africa, with lots of opportunities for south-to-south knowledge exchange and learning, networking and potential future collaboration, while obtaining an LSHTM degree without leaving their countries. Additionally, some participants can take the courses on a part-time basis while maintaining their critical jobs in their home countries. There is a strong mentorship component to the programme that enables students to be guided and supported in their career and professional development paths.

This model of decolonisation provides a positive example for other institutions to build upon. MARCH will explore the interest and support of other partners to extend this initiative for other programmes offered at LSHTM, UG, and other partner institutions.

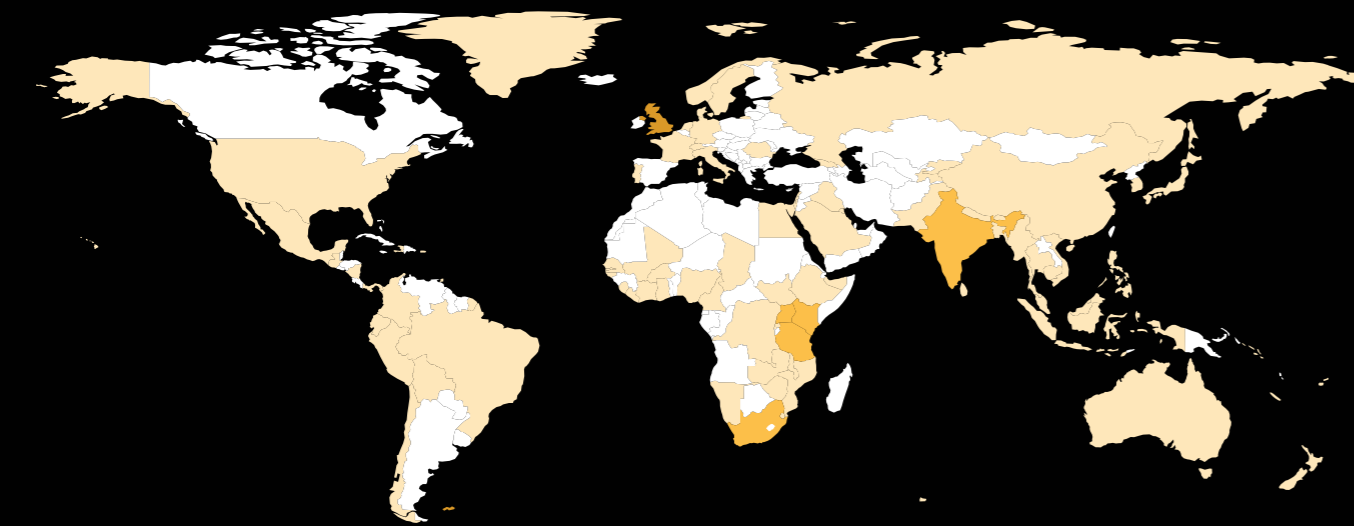
In its first year, 43 students from 17 countries from across Africa are participating in the programme. In future, it is anticipated that the MSc degree will be jointly awarded by LSHTM and UG.

Research degrees

Over the past decade, more than 500 research degree students at LSHTM have conducted research on women's, children's, and adolescents' health, drawing on disciplines ranging from anthropology to demography, epidemiology, mathematical and statistical sciences, medicine, sociology, and policy. Many research degree students have gone on to become independent research leaders and leading programmers and implementors of work to improve the health of women, children, and adolescents around the world.

Using data from the LSHTM registry, we collated all LSHTM PhDs awarded between 2009-2018 (inclusively) and found that 86% (547/637) of these were related to MARCH topics including 'Obesity in pregnancy' and 'Drug resistant tuberculosis in children', and only 14% (90/637) were not MARCH-related at all. When stratified by nationality of the PhD candidates, most of these research degree students were from the UK (208/547), the USA (58/547), and India (22/547). Where possible, we also stratified the MARCH-related research work by country of study focus. We found that outside the UK, the most common sites were India (44/423), and Uganda (29/423) and Tanzania (26/423) (Figure 7).

Figure 7: LSHTM PhDs 2009-2018 that are related to MARCH topics mapped by country of study (n=423)



Country	No. of PhDs
1. United Kingdom	83
2. India	44
3. Uganda	29
4. Tanzania	26
5. South Africa	23



With a growing focus on decolonising global health and the body of MARCH-related research work being conducted outside the UK, we aim to continue supporting and amplifying the work of research degree students, especially those based in and/or focusing on research in LMICs across the globe. LSHTM has partnered with at least 50 institutions in Africa during the last decade with embedded research leadership development. For several close collaborations, notably the MRC Units in the Gambia and Uganda, the Ifakara Health Institute in Tanzania, and Nagasaki University in Japan, LSHTM supports collaborative centre PhDs where staff from these institutions can undertake PhDs at a lower cost and mostly based in their home institution. Many students pursue MARCH-related research.

LSHTM, with MARCH, is also part of several 'capacity strengthening consortia' with funding for PhDs in areas including biostatistics, mental health, and malaria. The Wellcome Trust has been a key investor in this, including through the Bloomsbury Centre for Global Health Research. Most investments to date have focused on infectious diseases, so one of our priorities going forward is to secure funding for research and leadership training in other aspects of health for women, children, and adolescents.

Early Career Researcher in Focus

Dr Mandi Tembo conducted her PhD research on menstrual product choice and menstrual health knowledge, practices, and perceptions among young women in Zimbabwe with joint supervision from The Health Research Unit Zimbabwe (THRU ZIM) and LSHTM. She is now working on her postdoctoral research, through the Reckitt Global Hygiene Institute, using an innovative participatory action research approach to develop an evidence-based menstrual health (MH) resource and training package to improve MH-seeking behaviours, quality of care, and the overall wellbeing and quality of life for women in Zimbabwe. It will also be one of the first rigorous research projects on how to practically improve MH and MH-related awareness and care in Southern Africa. Dr Tembo is also a member of the MARCH Steering Committee.



It is such a joy to be a part of a Centre that is dedicated to supporting and promoting the work of career researchers all over the world. One of the many highlights of my LSHTM experience is collaborating with MARCH on events to mark Menstrual Hygiene Day, highlighting the variety of menstrual health related work being conducted by LSHTM students and staff globally. I have really enjoyed 'paying it forward' by supervising MSc summer projects and sharing guidance and advice with research degree students based on my lived experience in the PhD journey.

Other courses

Global Adolescent Health – Online short course

Partnerships with leading health research institutions, civil society and international agencies are central to the quality of our training. An example of this is MARCH's one-month part-time short course 'Global Adolescent Health', which takes place online. This course provides the knowledge, conceptual frameworks, and tools necessary to strengthen health sector policies and programmes for adolescent health and development. It is taught by LSHTM and the WHO, in collaboration with the Obafemi Awolowo University, Ile-Ife, Nigeria, Institute of Child Health, University of Ibadan, the Public Health Foundation of India, UNFPA, and UNICEF.

Massive Open Online Course

We launched a free Massive Open Online Course (MOOC), 'Improving the Health of Women, Children and Adolescents: from Evidence to Action', in 2015 in partnership with FutureLearn. The six-week course was created by over forty MARCH Centre members working in a range of disciplines, including epidemiology, demography, anthropology, medicine and public health.



Acknowledgements

Images

- Cover Ami, age 6, with her mother in Sibanor, The Gambia. (Credit Louis Leeson)
- p.14 Adolescent girl in Zanzibar, Tanzania
- p.17 A young girl carries a bucket of water drawn from a well in a slum in Dhaka, Bangladesh (Credit: Louis Leeson)
- p.18 Left: Mother with vaccinated baby in Serekunda, The Gambia (Credit: Louis Leeson)
Right: Pieter ten Hoopen/The Lancet Maternal Health Series
- p.21 Monitoring the umbilical blood flow between a mother and her child in Keneba, The Gambia (Credit: Louis Leeson)
- p.21 A mother providing kangaroo mother care to her premature baby at Edward Francis Small Teaching Hospital, The Gambia (Credit: Louis Leeson)
- p.23 Mother pregnant with her ninth child works every day in the rice paddy she cultivates in Keneba, The Gambia (Credit: Louis Leeson)
- p.24 Girl wears an air monitoring device as part of air pollution study in Sibanor, The Gambia (Credit: Louis Leeson)
- p.25 Portrait of a young boy after receiving his IV/DP drugs in Basse, The Gambia (Credit: Louis Leeson)
- p.27 SONA asthma study, young boy blowing into machine to test lung capacity, Uganda
- p.30 A clinician prepares a dose of Pneumococcal vaccine at Basse Hospital (Credit: Louis Leeson / LSHTM)
- p.31 Credit: Meghna Ranganathan
- p.32 Primary school students in Madagascar enjoy their school lunch (Credit: WFP/Anna Yla Kauttu)
- p.33 Family in shelter, Cox's Bazar, Chittagong, Bangladesh (Credit: Louis Leeson)
- p.34 Nairobi co-design workshop group photo (Credit: YLabs)
- p.37 Left: Art of Health Breathe In competition second place, Progress Nyandoro
Right: Art of Health Breathe In competition winning entry, Collin Makoni
- p.38 Researchers with patient samples, MRC/UVRI & LSHTM Uganda Research Unit, Entebbe, Uganda
- p.42 A mother and her two children taking part in the MASSIV trial in Basse, The Gambia (Credit: Louis Leeson)

Team

Co-Directors: Susannah Mayhew & Debra Jackson (Joy Lawn until 2023)
Deputy Director: Rebecca Sear
Adolescent Theme Leads: Nambusi Kyegombe & Aoife Doyle
Births Theme Leads: Uduak Okomo & Georges Reniers
Child Theme Leads: Amaya Bustinduy & Marko Kerac
PhD Representative: Mandikudza Tembo
Communications Officer: Josie McAllister

Acknowledgements

We thank Grace O'Donovan for her data analysis and for generating the maps. We are also grateful to Andy Reid for data extraction, Yemi Okwaraji for coordinating the MARCH survey, and Anne Mills for her leadership for Centres over many years. We thank all MARCH members and our funders.

Graphic design

Spy Studio

MARCH through the lifecycle

